The Harveian Oration
ON
EXPERIMENTAL PSYCHOLOGY AND HYPNOTISM.

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Mr. President, Fellows, and Gentlemen,—When asked to deliver the Harveian Oration, I felt very keenly that the duty was an onerous yet a very honourable one. Often as I have been present at Harveian Orations I can truly say that I never dreamt that the honour of giving one would fall upon me. I know my difficulties better than anyone here, but I will do my best to forge one more link in the chain which connects us with Harvey and his works. It seems to be taken for granted that we all of us know all about Harvey, and yet I found myself profoundly ignorant of the man and his real life's work when I began to formulate my ideas for this address, and I suppose I may take it for granted that the majority here is much in the same position. That Harvey lived during the disturbed times of Charles I, Cromwell, and Charles II, and that he first recognized the truth about the circulation of the blood one knew, but how little more! I shall, therefore, though I have nothing really new to add to the story of Harvey, consider the man and his times before proceeding to other matters which may be taken to represent his injunction that one must seek for truth by honest and unbiassed research. Each of us, in relationship to great men, has his own special standpoint; and perhaps I may be allowed to compare such relationship to the beams of light which may be seen passing over the sea on a moonlight night. Each one seems to have a special line of light coming directly to him. So it is with men like Harvey; each of us who has a life's work of a scientific kind sees emanating from him lines of light which are perhaps not conspicuous to others. I shall not in my oration attempt to trace, as has so often been done by my predecessors, the natural evolution of Harvey's discovery. The time was ripe for the discovery, and there were many who had very nearly reached the goal. But none had really established the facts, and no one had been able to bring the power of examination to the justification of his belief. I shall rather compare Harvey with a few of his contemporaries who had not any of his special gifts. Thus one will be able to see how different Harvey was from his surroundings; that he appeared, as it were, almost as a comet; unexpected and brilliant, and unlike other stars in the firmament.

The life of Harvey, extending as it did from the sixteenth well into the second half of the seventeenth century, covered a period in which many of the brilliant men of the time of Elizabeth were still living, and there were many others of distinction in almost every walk of life.

A time of unrest—social, moral, and political—seems after all to be likely to beget individual power of all kinds.

First let us consider Harvey's own professional work. We know the intimate relationship which from the earliest times existed between the religious and the medical professions. In Egypt, Greece, and Rome the temples were the hospitals and the schools of medicine. Similar relationships existed during the Middle Ages, and in Harvey's time the medical profession was only just acquiring independence. A medical book was written by Andrew Boorde, who has been described by Osler as the only priest-physician who wrote books on medicine. His books are full of medical interest, and give details of his travels in foreign parts, including Italy. His materia medica shows that the use of old and filthy animal matter was common. Much good advice is given, to which I shall refer later when speaking about the treatment of insanity, but this doctor-priest gave good advice which he did not follow, and he died an outcast from both professions.

The connexion between the professions led naturally to a spiritual interpretation of many of the human ailments.

The belief in witchcraft was strong, and both Sir Thomas Browne and Harvey were concerned in trials of witches, Harvey taking the more lenient view of the matter. Robert Burton, writing at this time, says: "It is a common practice of some men to go first to the witch and then to the physician." Paracelsus says of the patient: "It matters not whether it be God or the devil, angels or unclean spirits cure him, so that he be cured." Burton, who is so eminently judicial in most of his writings that one fails to know his own opinion, writes: "That which they can do is as much almost as the devil himself."

The herbalists of the time, represented by Gerard, were the teachers of botany and materia medica, and nothing is more interesting than the quaint advice given in their writings. They followed closely on the old classical teachers. Though the natural sciences were very backward, astronomy and mathematics were advanced and were represented by Newton and Halley, who predicted the coming in Harvey's time of the comet whose return is due very shortly. As might be expected, mathematics attracted Harvey, and even to the time of his death he is said to have continued this study.

General literature, which does not seem to have attracted Harvey, is very fully represented. In those days a change was passing over the stage, and plays of the historical type were taking the place of the morality plays similar to *Everyman*, though these continued to be played in the provinces. Shakespeare, Jonson, and Massinger represented the dramatists, while among the diarists are the sylviculturist Evelyn and Pepys, whose unique diary will remain for all time an example of self-analysis. Bacon was a patient of Harvey's, who did not appreciate the philosophy of the great Chancellor; but I must not keep adding to the list which represents the afterglow of the Elizabethan times.

Though human anatomy to a considerable extent was known and taught, the credulity of those writing on natural history is well seen in the large volume published in Switzerland by Gesner, who describes the most wonderful animals which are half human and half fish, and whales of such a gigantic size that sailors landed on them mistaking them for islands. It is of interest to note that Caius contributed to this book the articles on English dogs.

Separated from the Church, the rivalry between the different branches of the profession continued, so that in Harvey's time the Barber-Surgeons endeavoured to gain more liberty than was allowed them by the physicians, who at least in those days were looked upon as more important.

The Apothecaries' Society was founded, and had legal difficulty in gaining their freedom from control by the Grocers' Company. The Barber-Surgeons, like the Physicians, had the right of having the bodies of some criminals for dissection, and both had to give a certain number of public demonstrations and dissections, and Pepys describes how he was present at one given by the Barber-Surgeons, there being a morning demonstration, a substantial dinner, and an afternoon dissection. In Harvey's time lived Sir Kenelm Digby, whose sympathetic powder had such a wonderful reputation.

From Harvey's contemporaries I pass to Harvey himself, and I have nothing new to add in any way to what has been already so often said by others. He was the eldest of seven sons born to a worthy burgher of Folkestone; probably his mother, who was very highly esteemed by all her sons, was the source of their power. The sons seem all to have been successful men—five were merchants, and one attached to the Court. Harvey, born April 1st, 1578, was educated partly at Canterbury, whence he proceeded to Caius College, where he had his first introduction to human anatomy, as that college had the reversion of some criminals' bodies for dissection. After taking his B.A. degree he went to Padua, which was the leading European school of anatomy. He there worked hard at what was to be his life's study, and was evidently a social success, as he belonged to the more exclusive of the "universities" there. We have his diploma, and, though something has been made of the eulogistic terms in which the degree is given, one cannot forget that still in some Northern universities every doctor is styled "ornatissimus vir."

He was admitted to our college after having taken his M.D. at Cambridge, and he married in 1604. Of his wife little is known. He had no children; probably her life was, like that of most women of that time belonging to the professional classes, devoted chiefly to household management. I have looked into several books of the period, and may refer to one called *The Queen-like Closet or Rich Cabinet*. This gives what might be called the whole duty of the housewife as consisting in making preserves, cordials, and simple medicines, and ends with what may be called a complete letter writer, taking it for granted that the ladies needed help in such matters. The only special reference to her seems to be in regard to a favourite parrot, which from its loquacity was supposed to be male, but a *post-mortem* examination revealed an impacted egg, showing its sex.

We may well deal with Harvey's professional life in two aspects: In the one he was the busy practitioner riding about with his footman seeing his many patients. He was surgeon, physician, obstetrician, and lecturer on anatomy. His life must have been a very full one. He served among the elect of the College of Physicians, and as we all know declined the presidentship on the plea of his age. He discovered the circulation of the blood many years before he published the results of his work, and it is said that the publication destroyed his practice. Beside his private duties, he was attached to the staff of St. Bartholomew's, and there he did much useful work in reorganizing the staff.

Another side of his life is that connected with the Court; he was Physician Extraordinary to James I, and one thinks it was just as well that he had little to do with that monarch, for their views must have been opposed in most things. He was appointed physician to Charles I, and there was a very strong feeling of affection between the two. The King took personal interest in Harvey's work, and assisted him in many ways. Harvey followed the King to Scotland, and later was with him at Oxford, where he replaced for a time the Roundhead Master of Merton, and during the tedious siege he occupied himself with work on incubation carried out in Fellows' Room. With the fall and death of the King Harvey's real active practical life almost ended. He had kindly brothers always ready to receive him, and he had his work in connexion with generation to carry on.

The greatest sorrow of his life was the dispersal and probable destruction of his work on generation and on the development of insects, by the mob who invaded Whitehall on Charles I leaving London; and no one can tell what a set-back this has been to the study of embryology.

He was a great sufferer from gout, and the description of his treatment of himself for this is certainly alarming: he is said to have put his gouty feet into a pail of cold water till he could stand the cold no more, and then to have gone to the stove, and so to have got rid of the attack. He spent his later years more or less in quiet seclusion, and recently I went under the conduct of Dr. R. Jones to a house near Woodford in Essex, which, though altered since his time, in part remains as he left it. In this house there are the portraits of his father and his brothers, and the family likeness is very striking.

As to his general character one can only be struck with his power of earnest and continuous work under trying conditions, for not only was he a busy man, but the men of his own times looked upon him as a crack-brain, or almost as a breaker of sacred idols. With all this he was very tolerant, even of those who abused him. For example, when Riolanus wrote against him, he, in reply, writing to one of his old friends, says: "I cannot find it in my heart to say anything severe of Riolanus. I care not, however, to make any question here of the etymology of words, for I am not of the opinion that it is the province of philosophy to infer aught as to the works of Nature from the signification of words, or to cite anatomical disquisitions before the grammatical tribunal. You indeed counsel well when you say only make sure of the thing, call it whatever you will." The guiding principle of Harvey through all his life is well shown by some of his own expressions. Thus, quoting from Dr. Ent: "Nature, however, is the best and most faithful interpreter of her own secrets. Our Harvey rather seems as though discovery were natural to him, a thing of ease, and of course a matter of ordinary business." Again, "Nature," he says, "lies so open and is so very easy of consultation; discovery being made by those following the traces of Nature with their own eyes pursued her through devious but most assured ways, till they reached her in the citadel of truth. Nature is to be herself addressed; the paths she shows are to be boldly trodden, for thus, whilst we consult our proper senses, advancing from inferior to superior levels we shall penetrate at length into the heart of her mystery." He was guided by such principles as that "one ought neither to praise or dispraise other anatomists, and that disputation was waste of time." He was full of quaint wit and imagination, and he draws comparisons between the brain and a commander, the leader of an orchestra, and an architect. He could on occasion, however, use strong language, but this was generally rather against principles than against men.

He lived the later part of his life with his brothers, sometimes in the country, sometimes in London. It was said that he would be shut up in darkness for hours or even days together in contemplation, and at other times would spend much time in the open air, sometimes on the roof of the house. At all events, with advancing years and with recurring attacks of the gout, he was disinclined to move much. The end, as described by Aubrey, may probably be taken as the truth. It is as follows: "The manner of his dying was really and bona fide thus—namely, the morning of his death, about 10 o'clock, he went to speak, and found that he had the dead palsy in his tongue. Then he saw what was to become of him, and he knew there was no hope of recovery, so presently sends for his young nephews to come to him, to whom he gives one his watch—it was a minute watch with which he made his experiments; to another another remembrance, etc.; made sign to his apothecary to let him blood in the tongue, which did little or no good, and so ended his days."

It is, I know, presumption for any one in my position to eulogize a man like Harvey; one who, though the past had been preparing for his advent, was so far ahead of his time that he was not appreciated for a considerable period, though, unlike most prophets, recognized before his death. With his fiery nature, and his persistent love of truth, it is surprising that he was as tolerant as he was. Surrounded by political and religious unrest, he followed his pursuit of the light, having the true feeling of scientific inquisitiveness, but with little of the self-satisfaction so often met with in the purely scientific mind.

From this brief consideration of Harvey and his times I pass to what must be considered as the special part of my address. Each of my predecessors has taken some subject to which he has paid great attention or to which his life's work has been devoted; naturally, therefore, I turn to the consideration of insanity, its past and present treatment, and the prospect for the future.

Harvey, though recognizing the position of the brain in human physiology, does not seem to have been attracted by philosophy or mental diseases. He preferred to devote his energies to the more material side of anatomy. He recognized that little beyond words had resulted from the older methods of study, and he was intolerant of mere verbiage. Things, not words, were his object.

OLD BEDLAM.

Yet I cannot help thinking that he must have been brought into contact with the insane, and probably with old Bedlam, which, being in the city near Moorfields, was not far from his house and his work at St. Bartholomew's; and as the mastership of Bedlam was a royal preferment till it was handed over to the Corporation of London, it seems probable that he must have been brought into contact with it and its inmates.

I will briefly refer to the treatment of the insane before and during Harvey's day. Dr. Hack Tuke, in his *History of the Insane in England*, has traced the steady progress in the treatment of insanity. I have already pointed out that medicine and religion were connected, and, in considering insanity and its treatment, I am still more impressed by this connexion, which persisted much longer in the case of insanity than in other diseases. The mental and moral appearing closely allied, one is not surprised that mental disorder was treated by moral as well as physical means; and as moral treatment often involved punish-

ment, so the deranged were subjected to various forms of discipline. The influence of saints was considered of much value, and in Harvey's time St. Anthony had a great reputation in Padua; insane pilgrims in great numbers resorted to his shrine in that city, and must have attracted the notice of Harvey. In those days the visiting of shrines was a common prescription in cases of insanity, and one of the oldest in Europe still exists in Gheel, the City of the Simple, which is built round the tomb of St. Dymphna. In Perthshire St. Fillans, and in Ireland Glen-na-Galt were popular, and in Cornwall Dr. Hack Tuke found a similar holy place. In our own day we have Lourdes, to which lunatics as well as other sufferers are taken. The methods of cure differed, for whereas in some cases submersion almost to drowning point was tried, in others recourse was had to whippings, immersion, and binding for a night to a pillar near the church well.

Rosalind, in *As You Like It*, speaks of a madman as deserving "a dark house and a whip"; and in *Twelfth Night*, Sir Toby Belch says: "Come, we'll have him in a dark room and bound." Andrew Boorde, who lived just before Harvey's time, had strong views as to the necessity of controlling the insane. He says, "I do advertise every man which is mad or lunatic, fanatic or demoniac, to be kept in safe guard in some close house or chamber where there is little light and that he have a keeper which the madman do fear." It is advised that all dangerous things, even a garter, should be removed, and that no pictures or the like should be there, lest they suggest delusions; that the patient, if a man, should be shaved once a month and have no wine or strong beer. He graphically describes how he saw a German lady treated by the priests, who adjured the devils to come out of her, and he says this was done, but the language of the devils was so bad that he dared not tarry lest they should enter into him.

The most interesting writer on insanity in Harvey's time was Robert Burton, the author of the *Anatomy of Melancholy*, and I must refer rather more in detail to him and to his works.

He was a contemporary of Harvey, being born in 1576, and dying in 1630. His education was very like that of Harvey. After the preparatory school he went to Brasenose, Oxford, where his likeness adorns the hall. His education, like that of Harvey, was classical, but he never got beyond this. Like a Chinese scholar, he seems almost incapable of thinking except in quotation from classical authors. His references were to books, and not to Nature. He was like the spider in Swift's *Battle of the Books*, evolving his web from his inside, and not like the bee gathering in sweetness and light. He recognized the importance of observation, for he writes: "What can be more ignominious than for a man not to know the structure and composition of his own body?" Yet he either did not know of, or did not recognize, Harvey's work, but describes the blood, arteries, and heart after the older fashion of his day. He describes the blood as a hot temperate red humour prepared in the mesaraic veins and made of the most temperate parts of the chylus in the liver, whose office it is to nourish the whole body, to give it strength and colour, being dispersed by the veins through every part of the body, and from it spirits are first begotten in the heart, which afterwards by the arteries are communicated to other parts. He recognized, however, the relationship existing between mental work and general circulation.

Though only on the level of his time and a victim of authorities, yet when considering insanity his views on the whole are advanced and sound. He refers chiefly to melancholia, but incidentally touches on various forms of mental disorder. He traces their origin, causes, and symptoms, and the treatment is humane. I find no reference to whippings or dark cells.

He gives a table which is eminently satisfactory. First, he considers methods of treatment which are legitimate and others which are not. Among the latter he disallows charms, incantations, images and spells. He doubts the efficacy of these means, and considers that even if useful they ought not to be used. He objects to the use of relics; he, being a strong Protestant, is in general opposition to anything which is connected with the Romish Church. He asks himself whether it is lawful in such cases to appeal to the saints or their relics, and he satisfies himself that it is not justifiable.

Among the lawful means he places first and as most important the physician, but it must be a physician whose relations believe in his knowledge and honesty. This has a doubtful sound. He quaintly recommends the patient to be obedient and willing, and that he should not practise on himself. He goes fully into general treatment, advising air and exercise, and his recommendation as to diet, though differing from ours, yet seems sensible. He, after his manner, quotes without comment a recommendation to get drunk occasionally. When he comes to the treatment by drugs, not unnaturally he follows the ancients, and would have doubtless suggested visits to the Island of Hellebore. This drug and borage are commended specially, but there are many others referred to for special reasons. He says of borage and hellebore that they are sovereign plants to purge the veins of melancholy and clear the heart of those black fumes which make it smart. Probably the classical hellebore was not the drug so called now, and there is no drug bearing that name which has any reputation now, though when Master of Bedlam I used the black hellebore for special cases, but with no real good result.

He advises patients, however, not to trust entirely in drugs and not to trust in their physicians till they have proved them. He advised what nowadays would be looked upon as psycho-therapeutics. He says every disease of the soul has a peculiar medicine in Scripture: "As mastication is with bread, meditation is with what we read." He warns man against quacks and their allies, and suggests that the Devil himself is at times an expert physician.

In Harvey's time the word "Bethlem" had already been corrupted into "Bedlam." Originally founded by an alderman of the City of London in 1247 for the Order of St. Mary of Bethlem on the Wednesday after the Feast of St. Luke, it was seized by the Crown in 1375 as a foreign priory; the Master was appointed by the Crown till the time of Henry VIII. Stow in his *Survey of London*, 1598, refers to the fact of lunatics being sent to Bethlem, and this is the first notice of the fact, though he refers to it as having been done some time before.

Sir John Gresham, of New River fame, when Lord Mayor, obtained from the King the patronage of St. Bartholomew's and Bethlem, and in 1578 left money for "the poor diseased in their minds in Bethlem." In Harvey's time, in 1632, there was an enlargement and improvement, but still it was a miserable place, with manacles, whippings and dark cells.

About this time two statues were erected in front of Bethlem, one representing Furious Mania, the other Melancholia. The latter was said to be taken from the porter of Cromwell who was a patient. These statues were by Cibber, the father of the English dramatist. When I was Master of Bethlem these were unearthed, and are now in the City Museum.

It was one of the sights of London, and Evelyn in his *Diary* writes: "After dining with Lord Halton, I stepped into Bedlam, where I saw several poor miserable creatures in chains, one of them mad with making verses." Pepys does not seem to have visited it himself, but refers to the young people going to Bedlam. Members of Parliament had free entry to the place, others paid one or two pence. Little change in the treatment of the insane took place till the last century, and I have in my possession chains used less than a hundred years ago. Up till the removal of Bethlem from the City to its present site in 1815, the public were still admitted to see the patients for a fee of 2d., and George Cruikshank told me that he had there studied insanity and made sketches. The present Chaplain of Bethlem has most kindly given me many interesting facts as to the treatment of the insane during the sixteenth century.

That so little progress was made in medical treatment of the insane till recently is hardly surprising. We have not reached the physiology of the brain though our knowledge of its anatomy is now very far advanced. Yet, as has been wisely said, we are like the drivers, who know the names of the streets and their local relations, yet know nothing of the life within the houses. So we know much of the nervous system and little of what goes on within.

I have long since pointed out that there is no entity Insanity—that it is at most a negation, and a state which may depend on many causes. The brain, like other organs, has a limited power of expressing itself, and whether the brain itself is diseased, or is suffering from the bad service of one of its servants, the same symptoms will arise. And, further, there are many so-called cases of insanity depending on social misfits, for which no brain pathology will account. Splendid work is being done by our Fellows, such as Mott and Head, and I have little doubt that their work will, in good time, result in arresting or preventing many cases of insanity. I cannot quit the subject without a reference to the splendid offer of our Fellow Dr. H. Maudsley for the foundation of a mental hospital.

I now approach the nucleus of my address. I have, after very mature consideration, determined to deal with two subjects—one cursorily, because time will not permit me to do more; the other more fully, because I feel at the present time it is all important that it should be fairly handled.

Experimental Psychology.

The first subject that I shall refer to is experimental psychology. The general feeling, certainly among the seniors in our profession, is that experimental psychology is hardly likely to reward the men who are devoting their lives to it, and I have heard some good and thoughtful physicians express regret that men of promise were, as they thought, wasting their energies on what will be of little service, either to psychology or to medicine. They look upon the two as incompatible, and consider that physics and the imponderable are not to be brought together. Yet I feel that we have no right to stop investigation because we cannot see any immediate prospect of material result, or because we cannot see the lines on which advance is to be made. Psychology, as considered from the purely introspective side, has held the field long enough, and has made comparatively little progress. Experimental neurology is advancing, and the tendency in physical and chemical sciences seems to be towards unity and simplicity. So that the belief is growing that forces such as electricity, and matters such as are called elements are really fundamentally alike. And so I believe it will be found that the senses are fundamentally alike and comparable. Experimental psychology will have a very great deal to say in proving this unity. The fact that already mathematical formulae are being applied to experiments upon the senses is an indication of the movement which is taking place. To the psychologist, consciousness or sensitiveness seems to be the basis upon which all nerve and mental reactions depend. It seems to me that it is rather like the ether to the physicist. Just as ether is the storehouse of forces and seems ever to present fresh qualities to the investigators yet itself seems to remain incomprehensible, so the source of all mental action and reaction lies in sensitiveness and consciousness; and, equally, consciousness is now, and probably will ever be, beyond the human understanding.

We may study forces in Nature and the feeling within ourselves, but we are far from being able to connect them. The work of the experimental psychologist, which was begun on the Continent, had at first rather the aspect of social games. The various tests of memory and of verbal associations seem trivial, yet in mind-growth and mind-decay such observations have proved of importance. Later a much more important series of observations on physical and mental reactions has taken place. The second stage almost might be said to be the stage of observing reactions. And by these means the rate of thought was gauged to a certain extent. At present one of our Fellows, Professor Rivers of Cambridge, and Professor Myers, who has recently published a most valuable book on experimental psychology, have been working out the evidences of physical and mental fatigue and exhaustion. And the work that has been done by another of our Fellows, Dr. Head, is all-important, and seems to point to the sense of touch being a much more complicated organ than was at first supposed. And, what to my mind is more interesting, it shows that our preconceived ideas were altogether wrong. For long enough one considered heat and cold as relative terms, whereas now we know that there are definite heat spots and that there are definite cold spots. And beyond that, Dr. Head, after his autovivisection, disclosed other shades of feeling that had hitherto not been appreciated. Looking at his observations and the remarks by Professor Myers, one could not help seeing a parallelism between the tones of music, the spectrum of colour, and the shades of feeling; that, in fact, beyond the ordinary range of feeling there were impressions, or possibilities of impression, which we hardly recognize. It seems hardly likely that we shall develop any more senses than we have at present; but just as by scientific experiment it has been shown that there are vibrations, both of sound and of light, that are not recognizable by ordinary senses, so there are possibilities of other senses that we at present are ignorant of. Experimental psychology has done, at all events, two important things: it has shown us how to measure definitely the reactions of the senses to their surroundings, and at the same time it has shown us how readily some of the senses may be deceived, leaving us, I trust, with an open mind for things at present undefined.

The work done by Professor Rivers, and partly represented in his Croonian Lectures, is evidence of the most thorough self-sacrificing work, which, to my thinking, leads the way to a better understanding of drugs and their actions, so that we shall not be pouring drugs of which we know little into bodies of which we know less.

Professor Myers, whom I quoted in introducing the subject, says that experiment in some degree in psychology is as old as Aristotle, that experimental psychology is but one mode of studying psychological problems. Experimental psychology studies the responses of individuals to definite prescribed conditions. The experiment is modified by altering the mental attitude of the subject or the outer influences to which he is exposed. The reaction of the subject is personal, subjective—that is, feeling or expressional—generally both. It is really essential to have a second observer for the second part of the experiment. In experiments, expectancy greatly affects the results of feelings, and desire, fear, or like emotions may alter or invalidate the result. Introspection should never be omitted in a psychological experiment. It is only the possibility of giving physical expression to mental states which confers on general and experimental psychology the rank of science. This physical expression is obtained by observation of the subject and of his outward behaviour, and by the description of the subject's inner experience. No one can observe the mental states of another; they are the subject's private property. It is the object of experimental psychology to describe the complex in the terms of the simple. From one aspect, a certain mixture of hydrogen and oxygen is identical with an equal mass of water. Although the hydrogen and oxygen remain undestroyed during the transformation into water, we cannot overlook the fact that important alterations have taken place in their relationship to one another; they are fused, and are no longer a mere mixture. So, too, in psychological examples several tonal sensations fuse to create a new expression of temper. But both chemistry and psychology must recognize the inexplicable nature of the fusion. But this is more suggestive than exact, as the personality of the subject has to be added and considered. In the study of sensation experimental psychology proceeds hand-in-hand with the physiological; but, in regard to memory, comparison and mental work, we are indistinctly connected with a physiological basis. It is only in comparatively simple conditions that the physiological can accurately predict what reaction will recur with a given stimulus. The living body is characterized by unknown vital activities, as well as by known mechanical activities. The variability, not only among individuals but in the same individual, is supposed to be against the existence of any science of experimental psychology; but the object is to study Nature, and the variations and properties of mind are affected by different conditions. It is the aim of all science, and the aim of experimental psychology, to analyse, as far as possible, the conditions which may be at work, and to determine the result which must follow provided that these conditions exist. It is beyond my power fully to go into experimental psychology, but I think it right to call definite attention to the work that is being done.

Hypnotism.

And now for what may be considered the dangerous part of my subject. I feel strongly that the time has now come when we must face the fact that in all directions there is a tendency towards credulity. We have witnessed

the recrudescence of pilgrimages, the influence of theosophy, Christian Science, and mysticism in general. It is time that some attempt should be made to sift the wheat from the chaff, and in a calm consideration of the facts connected with hypnotism and experimental science I believe that a real advance can be made.

I may preface my remarks in reference to hypnotism by saying that I began with doubt, passed into a stage of indifference, and now have reached the stage of hope. Hypnotism has existed and been practised under other names from the very earliest times. It seems pretty certain that the old Æsculapian temples and similar places witnessed hypnotic and suggestive influence. It is interesting, too, in relation to Harvey, to remember that the so-called hypnotic influence exercised by placing a fowl with its beak on the ground and drawing a chalk line from it, was practised in his time by a Jesuit father. But later comparatively little progress was made. The real history of hypnotism, as understood at the present day, begins at the end of the eighteenth century, when Mesmer, in Paris, gave demonstrations of what was afterwards called mesmerism and animal magnetism. Unfortunately, he and some others who have taken up the subject of mesmerism and hypnotism have been led astray, or have added a certain amount of charlatanism to their scientific pursuits. It is quite certain that Mesmer was able to produce hypnotic results; but, not content with that, he became really a humbug, and finally the whole thing fell into disrepute. But it is, as I say, quite certain that, although his theories were wrong, his practice was, to a certain extent, right. He believed that there was the definite transmission of a vital fluid of some kind from the mesmeriser to the subject. Some one, commenting upon his work, said that it was either fluid or fraud, and he was inclined to believe more in the last.

The next important step in the development of hypnotism was that made by Dr. Esdaile, the East India Company's doctor, who, hearing of the experiments of Mesmer, made use of mesmerism in surgical operations, and succeeded in doing a very large number of operations under mesmeric influence. So successful was he, that a hospital was founded for the treatment of his patients. But for the discovery of ether and chloroform and their effects, it is quite possible that hypnotic suggestion would have made very much greater progress than it did.

I would here recall the fact that once before in a Harveian Oration the subject of mesmerism and hypnotism was considered. Dr. Elliotson, who was born in 1791 and who died in 1868, was a Fellow of this college. He was an M.D. of Cambridge, and assistant physician to Guy's Hospital, which he left to assist in the establishment of University College Hospital. He was a wilful, headstrong, and rather eccentric man. He had a large and fashionable practice, but he took up hypnotism and phrenology rather prematurely and without judgement. He delivered the Harveian Oration in Latin in 1846, and in it referred to mesmerism, and he was perfectly honest in his handling of the subject. It is said that, like Harvey, the propounding of the new thing led to the ruin of his practice.

Before passing to the definite consideration of hypnotism, I would like to remind you that our former Fellow, Hack Tuke, has referred to it pretty fully in his book, *The Influence of the Mind upon the Body;* and in the *Psychological Dictionary* there are two long articles by Drs. Charcot and Gilles de la Tourette. Besides that, he was instrumental in having the subject considered by the Medico-Psychological Association. Little, however, came of that investigation; and I may say, in passing, that nowadays we know to a great extent the cause of the failure. It is quite certain that hypnotism can only have a limited use, and that its use is not among the actively insane. Personally, as I said before, I have been interested in the subject when, as physician to Bethlem, I had the offer of the services of an expert hypnotist. I accepted the offer, and for some time tried the effect of hypnotic suggestion upon various forms of mental disorder. I was so dissatisfied that I gave up the experiment. Since then my successors, Dr. Percy Smith and Dr. Hyslop, have both, I believe, tried the experiment, with similar result.

Hypnotism has been looked upon with grave suspicion, both by the medical profession and by the laity; but there is no doubt that thoughtful men all over the world are recognizing that it is a force to be considered. Professor James, the American writer on psychology, writes as follows:

> There is a very distinct hypnotic state, which is a kind of border between waking and sleeping, in which the patient is kept by the gentle stimulus of talking. No true suggestibility of the hypnotic type can be attained till the trance stage is advanced. Suggestibility of this kind differs entirely from the suggestibility of normal life. It is a fact that in certain conditions of the subject, suggestions operate as they do at no other time; that through them functions are affected which ordinarily elude the action of the waking will, and that usually all that happens is a condition of which no memory remains.

There is an essential difference, then, recognized by all observers, between ordinary sleep and dreaming and the hypnotic state. Other countries are investigating the matter very thoroughly; in France, Germany, Norway, Sweden, Italy and Switzerland works have been written and observations made establishing facts which ought not to be ignored by us. There is, with all developing science, a hinterland, and most certainly, as far as philosophy and psychology are concerned, there is a very wide hinterland; and, as occurs in the material world, so in the scientific, such land is occupied in many cases under dangerous and untrustworthy conditions. And yet it is absolutely necessary that science should explore and develop such hinterland. There, of course, are plenty of examples of what has been called psycho-therapeutic treatment. It is recognized that every successful doctor, practically every successful man, has a personal influence which cannot be weighed and measured. Professor Osler has said that faith has a great deal to do with the influence of the doctor, and his followers look upon him and his treatment as an example of the conditions of faith and nux vomica. There is a very strong conservative opposition in the medical profession, but this is no new thing, and opposition should be the very strength of life. Many results such as those obtained by hypnotism may be attained without it; but I think those who have had the opportunity of observing will say that many such results are better obtained with hypnotism than without it. Mendel opposed it in writing, but made use of it in practice. Ewald objects to its being considered as medical treatment because quacks are hypnotists. But surely that is no real argument. Benedikt objected because of its mystery. But is not all treatment mysterious? A temporary loss of will has been looked upon as a serious danger. Surely, in the administration of anaesthetics such loss of will is more complete than under hypnosis. If there is any danger it is only like any other useful remedy: no risk, no good. Any danger that may occur is small and may be corrected. Among possible dangers it is said that a nervousness may be induced. It is quite possible that this is true in some cases, especially when approached incautiously. Hysteria and hystero-epileptic attacks are said not infrequently to have followed the use of hypnotism. Those who have practised it say that such results are very rare. From my point of view I think there is a certain amount of danger, especially in highly neurotic people, lest it should tend to the development of hallucinations of the senses. It is quite certain that a fair number of people develop delusions of persecution as the result of the study of spiritualism or occultism. It is, therefore, just as well to avoid the use of hypnotism in highly neurotic people. It is also possible that certain people may get to like hypnotism, and to be parallels to the dram-drinkers; they like the sensation of passivity which follows hypnotic influence, and would make use of it unreasonably. It is said dullness, lassitude, and heaviness may follow, but the subjects whom I have questioned deny this. Another objection which has been raised is that the effect is so temporary that little good can be expected. This is rather an opinion of inexperience, for with experience one sees very permanent results. Dr. Sainsbury eloquently puts it thus: "What need have we to go to hypnotism *in camera* when in the open forum, in broad daylight, amid the commonplaces of every life, it declares itself." For the most part we fail to realize how suggestion works in detail as well as in gross throughout the business of life. And this brings us to the point of those considerations, namely, that in every healthy art, no less than elsewhere, the ideational is a living force. Now, power is for use and abuse, and suggestion is for use and abuse—the orator to

use and the demagogue to abuse. In like manner, it is for the physician to honour and the charlatan to dishonour suggestion.

And now as to some of the established facts in relation to hypnotism. We are all familiar with the public performances of so-called hypnotism, in which persons are made rigid and their muscles are kept tense for long periods. Such long-continued strain of muscle may be maintained under hypnotic conditions without any sense of fatigue and without any subsequent pain. Again, as far as common sensation is concerned, it is usual for the public performer to induce insensibility, so that pins may be thrust into the skin without causing pain. Taste and smell may be perverted or suppressed. Sensibility, on the other hand, may be greatly increased, and it has been shown that every one of the senses, under certain conditions, may be rendered very much more acute than is normal. The pulse may be increased, but as a rule neither pulse nor respiration are increased by simple hypnotism. When hypnotic suggestions are made that the individual is to exert himself or is to run a race, then it is said that increase both in pulse-rate and respiration may take place. It is also quite certain that hallucinations of the senses may be produced, another of the stage performances being one in which a person is made to believe himself surrounded by bees or stinging insects. Hypnosis also may produce peristalsis of the bowels, and, according to some observers, one of the most certain effects of hypnotic treatment is the regulation of the bowels. It is a common observation among them to suggest that at a fixed time the bowels shall be relieved; and, according to their reports, such action of the bowels almost invariably occurs. Besides the muscular power, the common sensibility, the special sensibility, the action on heart, on lungs, and on bowels, there are the psychical symptoms to be considered. Memory is said to be markedly improved, that is increased, and that many forgotten details of earlier years are recalled. On the other hand, by suggestion complete forgetfulness may take place. It is noteworthy that in the various stages of hypnotism there are different degrees or states of memory. In the slight or suggestive stage, the memory for recent events—for passing events, in fact—may persist, whereas in the second and third stages the memory may be absent completely. It is also said that there may be a kind of double consciousness, so that in a person whose waking memory exists and persists the memory of one period of hypnotism is linked on to that of the past. But the whole condition of memory in connexion with hypnosis is a difficult one to follow.

One of the most important methods of hypnotic treatment, and the one chiefly in vogue now, is what has been called post-hypnotic suggestion. The patient is partly hypnotized, and then impressions are made upon him which reappear; but for complete success of post-hypnotic suggestion more profound hypnosis is required, so that, for instance, he is told that a certain thing will happen at a certain time, or he will be told to do a certain thing under certain conditions. He may be recalled to consciousness without being informed as to what he is to do later, and then he will proceed to do what has been suggested to him in his hypnotic state without having any memory or recollection of the instruction given. Some of the examples that are given—and given on good authority—are so extraordinary that one is obliged to say that, given their truth, they are beyond our human comprehension. The sense of time, for instance, is one that appears to be fairly well understood, but beyond the ordinary normal it is the experience of very many, including myself, that a determination to wake at a certain time will be followed by awaking at that time. Or if by chance I am called at an unusual or unexpected hour, say at 3 or 4 o'clock in the morning for some days, I and those like myself will awake exactly at the same hour on succeeding days. The exactness with which that awakening takes place has astonished me very much. In post hypnotic suggestion it has been pointed out that with some people you have only to suggest, while they are in the hypnotic stage, that in so many thousand minutes, or in so many hours and minutes, they are to do a certain thing, and that act will be performed within quite a reasonable time of that appointed. Some cases are so astonishing that one hesitates almost to give them. This is one of Bramwell's: A woman is told that in so many thousand minutes she is to write her name, the hour of the day, and the date. She is not very well educated, and would have considerable difficulty in working out the number of hours and minutes; and yet at the time appointed she writes down her name and puts the date, and is surprised to find what she has done. I have only reports of such experience, I have never had the opportunity of seeing it for myself.

These, then, are some of the very definite physiological symptoms produced by hypnotism.

The next and most important part of this subject is the relationship between hypnotism and medical and surgical treatment. It has been looked upon by some as itself a morbid mental condition; and it was supposed that only those who were suffering from hysteria and allied neuroses would be affected by it. It was thought, moreover, that such people were the very ones who ought not to be subjected to its influence. However, it has now been found, by long experience, that there are certain forms of disorder that are better treated by hypnotism than by anything else. It is quite certain that hypnotism alone may not be all that is required, and there, I think, a mistake is frequently made. It is thought that it must be hypnotism and nothing else. But one's experience is that surroundings, general conditions, are as important for the treatment as the hypnotism itself. As I have already said, there are many nervous cases which might be cured without hypnotism, but such cases, in many instances, would be cured more quickly and more satisfactorily by the use of hypnotism. It is certainly contraindicated in the very highly neurotic. I think those coming of very insane stock should rarely be subjected to its influence. Those who are actually insane are rarely, if ever, influenced by it. Epileptics, as a rule, do not benefit in one way or another. To put it shortly, nervous disorders that do not depend upon organic brain disease, those mental disorders that are purely functional, and such as do not cross the insane border-line, may be benefited. It has been said against hypnotism that it treats symptoms and does not treat the disease. But it seems to me pretty certain that in many cases if you can alleviate the symptoms you go a long way to cure the disease. In fact, in many cases the symptom is the most serious question. If, for instance, pain is disturbing digestion, rest, and general mental capacity, the relief of pain places the patient on an altogether different footing to that on which he was before. In the same way with sleeplessness. If you can relieve sleeplessness, in many cases the fundamental cause of that sleeplessness may be better treated. But as long as the sleeplessness goes on you are unable to attack the real cause. I would enumerate, therefore, some of the more marked conditions that may be relieved. Ramon y Cajal, who may be taken as a calm observer and a learned pathologist, describes delivery as occurring under hypnotic suggestion without pain or trouble. Several other writers have described labour carried through perfectly satisfactorily during hypnosis. Voisin refers to cases in which prolonged sleep in cases of acute mental disorder of a maniacal type has been followed by recovery; and I do feel very keenly that an enormous gain would follow in a large number of acute disorders, both nervous and physical, if by hypnosis one could induce prolonged sleep. Surely in some of the fevers convalescence would be much more satisfactory if a period of prolonged sleep could be induced without the aid of drugs. Functional disorders, such as stammering, the so-called muscular and nervous tics, have been very frequently relieved and cured. Enuresis has been treated frequently with great success, and chronic constipation, as I say, has also frequently been relieved. The best cases that have come under my own observation have been those associated with alcoholism or drug-taking. The result has in many cases been astonishing. Many will say, doubtless, that the Salvation Army and other emotional agencies have saved many drunkards. But the thorough inebriate is rarely, if ever, saved by the ordinary means. Probably all of us have experience of the result of retreats; temporary relief occurs, and occasionally permanent cure, but in a very large majority of cases there are relapses. It is somewhat difficult to speak clearly on this matter, for though I have had the opportunity of seeing drinkers and drug-takers who have been

well for considerable periods, yet there is always the possibility of a relapse. But the quickness with which the drink or the drug habit is overcome is very surprising. One has known patients who have for years been intemperate, and who, after the first hypnotic treatment, have lost the desire for drink. In treating these cases there are two or three different methods. One is the kind of moral influence, getting the patient into the suggestible stage, and then pointing out the disadvantages of drink. Another is post-hypnotic suggestion that drink is disagreeable. I have seen patients who have been cured by both methods. Next to these cases, those of moral perversion are among the most interesting, and are certainly frequently benefited. Personally, I am not able to speak so fully of them, but the general experience is that, besides the drinkers, the morally depraved, if they are not absolutely weak-minded, may be greatly benefited by hypnotic treatment. Suggestion in these cases may be called moral massage, and, just as muscular power may be restored by passive stimulation, so mental power may be recovered by repeated gentle stimulation. The most marked successes have been with some of these cases, but I fear many failures have also to be recorded; but this only means that hypnotism has failed in cases where every other form of treatment has also failed.

The production of sleep and the removal of pain are, of course, important, but still more important and most obscure is the increased susceptibility to normal moral influences produced by hypnotism. It must be recognized that when the subject does not accept freely the treatment, no therapeutic result will follow. As I have said, hypnotism is useful often in very different morbid states, relieving symptoms, whether due to simple or to organic causes. The most suitable maladies for hypnotic treatment, then, are the neuroses—nervous complaints in which no anatomical cause is demonstrable. This list, of course, is very long, including what I have already referred to—many aches and pains, skin irritability, spasms, tremors, and the like. Hysterical spasms and palsies are frequently relieved. It is, of course, to be remembered that in treating a patient suffering from moral disorder a physician should never do or say anything in a hypnosis which the patient would not assent to while in waking moments; that is, on no consideration must advantage be taken of the semi-conscious condition. It may be well, however, here to mention the experience of all who have been working along these lines—that it is impossible to influence a person to do what is absolutely alien to his training and inheritance. Take such an example as this: It was suggested that a lady should put out her tongue and make a rude remark to the physician. She fully inclined to do something of the sort, but did not. And experiments were tried such as inducing people in hypnotic conditions to go through what might be called a criminal act, such as stealing or assaulting some supposed enemy. Such things can be done as play-acting, but it certainly has never been shown that any criminal act has been done under hypnotic suggestion. Even in organic disease, such as tabes and apoplectic paralysis, improvement seems to result, and in some forms of obstinate vomiting, especially that associated with nervous anorexia, hypnotism is very beneficial.

From the medical let me pass for a moment to the surgical side. As early as 1821 Recamier performed operations in mesmeric sleep, and, as I have already said, in 1840 Esdaile did many operations in Calcutta; while the present professors of hypnotism report many cases in which slight operations, such as the removal of teeth and the like, have been done. I suppose that it is necessary to give a few examples of treatment by hypnotic suggestion, but I shall only very briefly here refer to them.

In one case, a very strong, healthy, middle-aged man, who had suffered from a very severe shock of a moral character, passed into a state of hypochondriasis, so that he felt he ought to be shut up in an asylum; he felt that he might be a serious danger to somebody, that he was certainly going out of his mind. He was treated in the orthodox fashion. He was given rest, he had a sea voyage, he was sent to live in the country to amuse himself, to play golf, and to try to ignore his past troubles. Week after week, month after month, such treatment was followed, only to fail. At last I suggested, when consulted, that he should try the effect of hypnotic treatment. He was placed in a home and seen by Dr. Bramwell. After the very first treatment he said he felt at last that something was being done for him, and after several weeks of treatment he became perfectly well, and very grateful, wondering, however, that no one had thought of hypnotic treatment earlier.

In another case, a lady belonging to a clever but neurotic family suffered from all the forms of hysteria, having paralytic seizures, being subject to spasms, and having general loss of nutrition. She was treated on the Continent, and she was treated in England by men of great experience; she was in one of the best of the London hospitals under the best possible conditions. From bad to worse she went, till it was looked upon as quite certain that nothing would relieve her, and that she would pass into a condition of emaciation, and ultimately die. Hypnotic treatment began to affect her almost from the first, and although she took some considerable time before she was quite well, yet the end was quite satisfactory, and she is living a perfectly healthy and active life.

In another case, in which there was nervous vomiting, which threatened to produce complete exhaustion, hypnotic suggestion began to act at once, the result being that the patient is now a healthy, active-minded and active-bodied man. These, I say, are merely samples of many cases which are constantly brought before one.

That people should be relieved from mental obsessions is to me still more interesting, and still more difficult to explain, and I speak about them with the more diffidence as I have had so far little experience of them. But the reports are so clear and so matter-of-fact that I have personally no doubt that many patients recover completely who have suffered from these dreads, from doubt, from fear of poisons, from fear of contact, from what have been called the phobias of all kinds. Some of them lose them very rapidly, almost instantaneously, but in other cases they seem to be slowly relieved.

So far, then, I have done my best to point out that the investigation of hypnotism is a thing that should not be ignored in England. When the other nations are carefully investigating the physiology and the therapeutic value of this potent influence, it is certainly rather a pity that England should be in the background.

Wishing to follow our great master in not accepting anything without personal investigation, I took advantage of the opportunity offered by Dr. Wright to test some of the points of most importance to which I have referred. A gentleman, an engineer, who had been relieved by treatment by Dr. Wright, was willing to allow him to demonstrate the various stages of hypnotism and their effects. The gentleman is young, very strong, healthy, and free from neuroses. He is in very marked *rapport* with Dr. Wright, but with no other hypnotist.

He was asked to sit down and talk quietly about his relationship to hypnotism, then he was told to go to sleep; a few passes being made over his head, he slowly closed his eyes, and in less than a minute he was sleeping placidly. By the gentle stroking of his left arm this was rendered inflexible; the pulse was in no way affected; pupils were equal, but rather larger than before he slept, and were sluggish. He was slowly aroused (it being well always to recall the subject slowly). After a talk on general matters he stated that he had no sense of fatigue in the arm or any recollection of anything said and done during the period of hypnosis. He was again in a similar way sent to sleep. It was then suggested that at the end of seven minutes he should lose all power and sensibility in his right side. He was roused, given a cigarette, which he smoked while he talked, having no knowledge of the suggestion which had been made. About five minutes after he had been roused his right arm fell useless by his side, he passing at the same time into a partial stage of hypnosis. This is common when a post-hypnotic suggestion is being carried out. The whole of the right side, including the face, was insensitive; the pupils were smaller and inactive. He was again slowly aroused, and resumed smoking, having no feeling of oppression or recollection of anything which had been said or done. He was later again hypnotized, and in that condition he was asked what had been done formerly. After some hesitation he in part recalled the facts.

It is interesting to note that though constantly the acts performed during hypnosis are not recalled when awake, they are fully remembered on a second hypnosis. We tested his emotional side by getting him to recall scenes in a comic opera, at which he heartily laughed but had no knowledge of on waking. While unconscious it was suggested that when he woke he should remark upon a strong odour of violets. He was awakened and offered a cigarette;

but, looking about the room, he asked whence the strong smell of violets came.

I inquired as to the revival of long-past impressions, and it seems that occurrences which took place before his present memory existed, had been revived and verified, but still more interesting was his experience in reference to a mathematical formula which he had forgotten. Being hypnotized he dictated it, and though when once more awake he did not remember it, when shown what he had just dictated he recognized it as the lost formula. This, of course, is in a way parallel to the solution of difficult problems during sleep.

I feel that in passing to the subjects of experimental psychology, and more particularly to hypnotism, I am on what might be called dangerous ground. Many of my colleagues, I know, shake their heads and doubt the utility of hypnotism, and the fitness for the subject being seriously considered. But one of the great pieces of advice which Harvey gave was that we were to follow truth without fear as to whither it may lead. I am doing my best to direct the line of advance by means of observation, and it seems more than likely that the two opposing forces as they appear at present—experimental psychology and hypnotism—may, after all, unite in the scientific advance.

And now, gentlemen, it is time for me to bring this my Harveian Oration to a conclusion. No one can be more conscious of its shortcomings than myself, but I have done my best to present to you a brief survey of the great Harvey and his environment, and I have naturally dealt with the subject from the point of view of my own special line of work. Let me take leave of him with a few final words of reverence and appreciation.

Amongst the most prominent characteristics of Harvey was the singleness of purpose of his life. He had formed definite aims, or, rather, he determined to look for himself into things without fear or prejudice. And his power for steady scientific work did not prevent him from entering into practical professional duties of all kinds. He was socially acceptable alike in England and in Italy; but, with all this, he seems to have disregarded the great men of his time. Shakespeare was living, and writing, and acting; Milton was in full evidence by his politics and his poetry; Chancellor Bacon was known, but was not appreciated; and so with many others of the very distinguished men of his time. Science was his mistress; literature, as such, did not appeal to him. Though the exact sciences, like mathematics, formed an interest up to the end of his life, he still followed the anatomical and the physiological rather than the mathematical sciences. Religion did not seem to take a prominent hold of his character, and, though living in the most stormy political period, he seemed to be little moved by the tragic events through which he passed. He was a man of kindly family affection, yet his one object—the pursuit of truth—so dominated him that little else appears upon the horizon.

Let me conclude with his own words: "I therefore whisper in your ear, friendly hearer, and recommend you to weigh carefully in the balance the exact expression of all that I have delivered in this my exercise."

AT the annual meeting of the Society of Medical Officers of Health on October 8th, Dr. H. C. Pattin of Norwich was installed in office as president, and delivered an address, entitled, State Standardization of the National Life. The fifty-third annual dinner of the society took place the same evening, and was attended by the Dean of Norwich, who described himself as the commercial traveller of the section of the Poor Law Commissioners which had signed the Minority Report; by Mr. Sidney Webb of the London County Council; by Dr. Newsholme, Principal Medical Officer to the Local Government Board; by Sir R. L. Morant, Secretary of the Board of Education; and by Surgeon-General Evatt, and Sir James Crichton-Browne, Presidents of the Poor Law Officers' Association and the Sanitary Inspectors' Association respectively. In response to the toast of the evening, the president spoke of medical officers of health as analogues of Wesley, in that as preachers of the gospel of hygiene, they took the whole people for their parish. He hoped that before long they would find incorporated with them all officers engaged in public medical aid work. Their general aim should be to standardize the healthiness of the nation, and to aid in the development of a communal conscience to whose bar all social activities could be brought for judgement.

A Report
ON
CANCER RESEARCH.
AN INVESTIGATION BY "IN VITRO" METHODS.

BY

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FOR more than twelve months we have conjointly been endeavouring to throw some light on the subject of cancer,* by studying the disease from what appears to be a new standpoint.

In August, 1908,[6] we found that the blood of cancer patients appeared to contain a substance which, like the artificial excitant of methylene blue and atropine, already described,[4] excites amoeboid movements in leucocytes, and shortly afterwards we described how lymphocytes in the presence of both these excitants extruded what at that time we believed to be flagella.[7] These observations led one of us (C. J. Macalister) to suggest the advisability of instituting a combined clinical and pathological research upon the lines which will be referred to in this paper, especially since the study of cancerous tissues by *in vitro* methods had thrown some light upon the behaviour, and possibly also upon the character, of the cancer cell.

In order to carry on this research efficiently it was manifestly preferable that the whole time of one of us should be devoted to this and kindred subjects; and this became possible owing to the great generosity of Sir William Hartley, who, together with Mrs. George Holt, Mr. and the Misses Allan Paton and a number of their friends, furnished the necessary funds. A committee for administering the fund was formed under the chairmanship of Professor Sherrington, and one of us (H. C. Ross) was invited to become director of the research, which is being carried on in the Hartley Laboratories at the University of Liverpool. The committee and medical staff of the Royal Southern Hospital in Liverpool also associated themselves with the work, and have provided laboratory accommodation for carrying out those portions of it which are more immediately concerned with the clinical study of the disease.

The points which we shall set forth in the course of this report, which is the first to be submitted, are based partly on previously published investigations and upon the suggestions of others, some of which have been very important, but largely upon certain well-known facts concerning cancer with which it has been necessary to reconcile each step of the work.

Among other points we shall refer to the existence of what may be described as an excitor of reproduction for human lymphocytes, and so far as we are aware a chemical agent which, when absorbed by an individual resting human cell, will cause that cell to endeavour to to reproduce itself forthwith, has not been previously described.†

Apart altogether, however, from the possibility of a similar substance being associated with cancer (and the facts rather point to such a conclusion), we submit that the finding of a chemical agent by the employment of which one is enabled at will to cause human lymphocytes to reproduce themselves on a microscopic slide is in itself a point of considerable scientific interest, especially as the mitoses induced are not of the somatic but of the reproductive type. We shall explain how these mitoses have thrown light upon the morphological differ-

* The word cancer in this paper refers to carcinoma.

† Loeb has caused artificial development up to a certain point in the ova of starfish by the action of certain solutions. (*Die chemische Entwicklungserregung des tierischen Eies*, Berlin, J. Springer, 1909, and former publications.)

ences between lymphocytes and polymorphonuclear leucocytes;* and, lastly, we shall show that when a cell has responded to the exciting agent, it appears to convert it into a poison which, under the experimental conditions, seems to be a virulent one, since the cell invariably dies, and that the production of this poison may have some bearing upon the phenomena seen in cancer. Other facts have presented themselves in the course of our investigations which we believe to be important to cancer research; and we propose, after endeavouring to interpret or trace the significance of the known cardinal features of the disease, which, although somewhat meagre, are fairly definite and must form an important basis for research, to enumerate our experiments in the order in which they were made, together with the principles upon which they were founded. We wish especially to be assured that our opinions as to the possible explanation of the significance of our fundamental facts are within the realms of reasonable supposition, and, since the principles underlying cancer research are mainly clinical ones, we have thought it appropriate to read this report before a medical society and to publish it in a medical journal.†

Methods.

Before proceeding further it is necessary that we should give some account of the methods of research which have been employed. We deal only with living human cells, and our problems are therefore associated, not with the phenomena seen in dead structures but with those of vitality and stimulation. In this report, therefore, the word "cell" refers to a living cell unless otherwise specified, and we submit that the staining of living cells is an advance on the older fixation methods, which give pictures of dead structures. Perhaps one does not obtain quite such useful observations of the arrangements of the cells by this method, but it enables us well to observe some of the phenomena concerned in life and death—and now, we may add, in reproduction.

The appearance of the living cell thus examined is not merely that of a flattened diagram, for by careful focussing the arrangement of the cellular elements can be seen from above downwards, as well as from side to side. In the case of leucocytes, active movements may be excited while the cells are staining. The rapidity of the staining may be observed, and one can stain cells slowly or rapidly as may be desired, the highest possible immersion objectives being employed in the usual manner.

There is, however, one drawback to *in vitro* staining. The specimens cannot be kept. When a cell dies, or if it is killed by the staining of the nuclear chromatin, its cytoplasm liquefies, and then it becomes achromatic.[2] If the cell has been stained its stain fades. If it is dead and has not been stained it may now refuse to stain. After death there is no alternative but to discard the specimen, owing to this onset of achromasia which cannot be prevented. All attempts to fix the dead cells have failed owing to technical difficulties. Hence, one has no cabinets of slides to refer to, and therefore it has been necessary to repeat each experiment over and over again to assure ourselves that the result which was first obtained could be repeatedly demonstrated.

This method is simple, and it has already been described in detail in former papers[1 3 4 5]. Briefly, it consists in the mixing of some stain ‡ with agar jelly containing a little sodium citrate and sodium chloride. The jelly is melted and the whole mixture is boiled, a drop of it then being run on to a slide where it is allowed to set. The cells to be examined are suspended in citrate solution, and a small quantity of the suspension is placed on to a coverglass which is then inverted and allowed to fall flat on to the film of jelly. The cells spread out between the coverglass and the jelly, and if the latter has been allowed to set thoroughly on the slide, the arrangement of the cells will always be found to be suitable for examination, and consequently one never finds "bad specimens" by this method. Soon after the cells come to rest on the jelly the stain will, under suitable conditions, diffuse into them. Of course if the jelly contains other substances as well as stain, these substances will also diffuse into them. The cells continue to live, and we can thus observe the effects of the stain and other substances upon them.

Two things must be remembered in *in vitro* staining. First, that so soon as the nuclear chromatin of a cell stains, death occurs.[1] Any attempt to stain the nucleus causes death; and when death has occurred, the nuclear chromatin stains bright scarlet. After death achromasia ensues and the stain gradually fades as the cell becomes disorganized.

The second point is that the diffusion of substances, including stain, into living cells appears to depend almost entirely upon certain physical laws, and unless these laws are adapted to the conditions required in each specimen, successful results will not be obtained.

The main principles involved in the diffusion of substance into living cells concerned in researches of this nature are as follows: Some classes of cells absorb substances more rapidly than others. Hence we say that different classes of cells have different "coefficients of diffusion," but it must be borne in mind that the rapidity of diffusion also depends upon the concentration of the substance in the liquid surrounding the cell. It will readily be understood from this that the greater the concentration of the substance in the medium in which the cell rests, or the lower the coefficient of diffusion (*cf*) of the cell itself, the more rapidly will the substance be absorbed. There are other factors concerned in this diffusion of substance into cells—for instance, heat and alkalis both accelerate it, and it must be obvious that time is an important factor, because the longer the time which is given for the diffusion to take place, the greater will that diffusion be.

A simple experiment will explain these points: The jelly which has been referred to, and which for convenience we call "coefficient jelly,"[5] consists of a standardized preparation of agar jelly which is faintly acid and contains certain quantities of sodium citrate and sodium chloride. It is made up in tubes, each of which contains 5 c.cm. To one tube of this jelly we can add a given amount of liquid stain, and to another similar tube we can add a greater quantity of the stain, distilled water is then added to each tube until it contains a total of 10 c.cm. The tubes are then steeped in boiling water until the jelly melts, so that complete mixing is effected. It will be apparent that the first tube will contain a low concentration of stain and the second tube a higher concentration, while both contain equal concentrations of agar and salts. If the cells which are going to be examined are placed upon films made from these tubes and kept at equal low temperatures, say that of the room, the diffusion of the stain into the cells will gradually take place, but more rapidly in the case of the film containing the greater amount of stain. If the slides are incubated at 37° C., for instance, the diffusions will take place more rapidly, and the longer the slide remains in the incubator the more deeply will the cells be stained, always bearing in mind that the jelly which contains the larger concentration will stain the cells before and more deeply than the other. Hence, by playing off these factors—that is, the concentration of the stain, the heat, and the time—against each other we can cause the staining, or prevent the staining, of the cell to any degree we please.

To a tube of coefficient jelly a variety of substances can be added; and since one invariably makes it up or completes it with water to 10 c.cm, by a simple calculation we are able to tell how much of any given ingredient a given tube of jelly contains. We have already indicated that alkalis accelerate diffusion and that acids and neutral salts delay it, and by means of these we can still further modify the rapidity and degree of staining. The cytoplasmic granules of cells stain first and then their nuclei.

We have already mentioned the fact that the absorption of substances into cells depends not only upon the degree of their concentration and the several factors which accelerate it, but also upon the coefficient of diffusion of the particular cell which is being observed. This coefficient may be determined by a procedure for the full details of which we must refer the reader to a paper by one of us, "On the determination of a coefficient by which the rate of the diffusion of stain and other substances into

* In future in this report the word "leucocyte" means the polymorphonuclear leucocyte.

† An epitome of this report was read at the Liverpool Medical Institution, October 14th, 1909.

‡ The word "stain" in this report refers to Unna's polychrome methylene blue (Grubler) which has been found to be the most useful dye to employ.

living cells can be measured," published in vol. 81, B, No. 546, of the *Proceedings of the Royal Society*.

As this is a recent publication, it may, perhaps, be well briefly to reiterate the principles with which it deals. It consists in the measurement of the several factors already alluded to—namely, heat, time, alkali, concentration of stain and salts in certain units. A series of tubes of coefficient jelly are made up to 10 c.cm., as before, but each tube contains a certain known number of units of stain, alkali, and salts. Since salts delay the diffusion, the total number of units of them is subtracted from the total number of units of stain and alkali, and the number which remains is called the "index of diffusion" (fx) of the jelly. To find the coefficient of a given cell it is placed on to, first, a jelly with a low index of diffusion, and then on to higher jellies, until one is found which will just cause the nucleus to stain. Time and temperature are also divided up into suitable units, and the total number of units of these two factors added to the index of diffusion of the jelly gives a grand total number, which is the coefficient of diffusion of the cell under examination. The units have been measured by experiment, and are so arranged that they are all of equal value—that is, the unit of one factor is equal in its effect, as regards the acceleration or delay of diffusion, to a unit of any other factor. The units are, in point of fact, interchangeable; consequently, if a jelly is found which will just stain the nucleus of a cell, its index of diffusion may be plotted thus:

$$fx = (s + a) - (c + n),$$

s being the unit of stain, a the unit of alkali, c the unit of sodium citrate, and n that of sodium chloride.

But the coefficient of diffusion of the cell consists of the index of diffusion of the jelly which will stain the nucleus *plus* the total number of units of time and temperature. Thus:

$$cf = (fx + h + t),$$

where h = the unit of temperature, and t = the unit of time.

Therefore it may also be said that*—

$$cf = (s + a + h + t) - (c + n).$$

The lymphocyte being the important cell in the present research it may be well to use it as an example and indicate its cf by means of an equation. Thus: A drop of fresh blood was placed on a film of jelly which was made from a tube of coefficient jelly to which had been added 0.5 c.cm. of stain, 5 units of alkali, and was completed with 4 c.cm. of water up to 10 c.cm. The coefficient jelly contained its usual content of three units of sodium citrate and one unit of sodium chloride. The slide was kept at 37° for ten minutes (one unit of time) when it was found that the nuclei of the lymphocytes had just stained. What was the coefficient of diffusion of these cells?

$$cf = (5s + 5a + 7h + t) - (3c + n) = 14.$$

This is the principle which has been employed throughout these researches in investigating some of the properties of cells. In practice it is quite easy, although it is difficult to describe shortly. We always employ the standardized coefficient jelly, but it is important to remember that when stain and other substances are added to it it must always be completed up to 10 c.cm., and that it should contain the correct amount of alkali (that is, it should have the correct fx) to cause the stain, or whatever it contains to diffuse into the cell with due regard to the latter's cf. The equation is the guide. Since all the units of the several factors are equal, they are interchangeable with the cf, and thus if any one of them is an unknown quantity, it may be ascertained by bringing the known coefficient to the other side of the equation, and substituting for it the unknown quantity required. It was through acting on these principles that the reproductive excitant to which reference has been made was noticed, and they must, in making experiments of this nature, be rigidly adhered to, for, if the index of diffusion of the jelly is not correct for the coefficient of diffusion of the cell, it may contain a great concentration, say, of the reproductive excitant, but the cell will refuse to respond to it, no matter how much of that substance be present.

The coefficient of diffusion of healthy human cells appears to be constant, but can be lowered by certain agents. Although the coefficient of diffusion varies in different classes of cells, it appears to remain constant in each class, provided the cells have not lost vitality. This appears to be the case with blood cells and those tissue cells which we have tried. On the other hand, approaching death of a cell lowers its coefficient of diffusion, and certain poisons also have this effect.[6] The cells of persons suffering from chronic illnesses also show a low coefficient of diffusion, and this we have found to be marked in cases of cancer. As we shall show later, some substances have the property of lowering the coefficient of diffusion without being very poisonous, and it is possible that the low coefficient of diffusion found in cancer may be promoted by some such substance.

We have stated that our research has been based upon certain well-known facts with which it has been necessary to reconcile each step of the work; and we shall now say a few words about each of these facts or axioms, and the theories which have suggested themselves concerning them, before proceeding to explain the experiments arising from their consideration.

Age-Incidence.

The age-incidence of cancer is strikingly important. It is a disease which occurs mainly in persons over 40 years of age, and its prevalence appears to diminish in old age. Bashford and Murray state that "Any explanation of the etiology of cancer must accord with the circumstance that, when considered statistically, cancer is a function of age, and when considered biologically, it is a function of senescence.[12] Among its characteristics we must recognize that during youth the disease is rare, and that when the age of its incidence has been reached its tendency is to attack the robust rather than the infirm. It occurs in persons who appear to have perfect vitality, and in this respect contrasts remarkably with the incidence of infective diseases. On the other hand, a loss of vitality in a person's cells seems to be unfavourable to the onset of cancer, and we find that it does not occur to any great extent among very old people.

We are thus brought face to face with the problem, What is it that occurs in the tissues after the age of 40 which renders them liable to the onset of cancer? The data upon which we have to find an answer to this question are so indefinite that suggestions can only be made vaguely. We must be prepared, however, to appreciate that the onset may be induced by the oversetting of a normal balance. The body is mainly composed of living cells, all of which have been derived from a pair of cells, and they constitute an elaborate combination of living factors. We know that in certain tissues these cells are continually dying and being replaced, so that it is evident that birth and death must be going on incessantly in the body. What happens to the dead cells? They of course liquefy and become disorganized, and their constituents are presumably excreted or converted into other compounds. While this is happening it seems probable that some of the products of the remains of dead cells may be absorbed by their neighbours, for it must be remembered that the diffusion of substance into living cells appears to be a physical process over which they exercise no control. There are doubtless some cells which remain alive for long periods; for instance, it has been estimated (and we are informed that it is practically certain) that some cells of the central nervous system live throughout the life of a man. Many cells, however, only live a very short time, the length of their lives perhaps varying in different parts of the body, so that the remains of dead cells are probably always present in the body fluids. In this connexion, however, we have to keep in mind the physiological curve expressive of the relationship between anabolism and katabolism. There are only three stages of life if it is viewed from this point of view, the first terminating at about the 30th year, when a man reaches his prime, and up to which period cellular birth must preponderate over its death-rate. For some years it may be suggested that anabolism and katabolism remain balanced, and that after the age of 40 quite physiologically, so that nothing occurs to make a man aware of it physically, these conditions

* The actual amount of each factor contained in one unit will be found in the paper referred to, but we may repeat here that the unit of stain is 0.1 c.cm. of Grubler's solution and that of alkali is 0.1 c.cm. of a 5 per cent. solution of Na_2CO_3. A unit of time is ten minutes, the unit of temperature is every 5° of temperature from 10° C. upwards.

begin to be reversed and more of the products of katabolism—that is, the remains of dead cells—tend to exist in the body fluids than was the case before middle age.

Here we have a fact incidental to the cancer period which suggests the possibility that these products of katabolism may in some way predispose to the onset of malignancy. It cannot possibly be suggested that they are the cause of the disease, for if such were the case everybody over the age of 40 would die of cancer; but assuming that some product of katabolism may possibly favour the onset of the disease, we may enlarge upon the speculation and say that it is a certain morphological (or chemical) element in a dead cell which may be the agent. For the sake of argument it may be derived from either the cytoplasm, the cell wall, the nuclear wall or the linin or it may be the chromatin itself.

Vitality.

We have mentioned incidentally that cancer is a disease of those who appear to be in robust health, and the question of the vitality of the individual or of the cell is germane to our argument. It is obvious that the response of a given cell to a given excitant depends upon two conditions—namely, the rate of absorption of the excitant (a subject which has been discussed) and the vitality of the cell itself. The lower the vitality of a cell the greater will be the amount (or potency) of the excitant required to bring about a certain response, and such a point of lowered vitality may be reached that the cell will not respond, however much excitant may have diffused into it. In old people, when the incidence of cancer appears to be on the wane, it is possible that the cells concerned are of comparatively low vitality, or that the proportion of young cells which are liable to be attacked is smaller than it was in middle life, and that this may in some way account for the fact that cancer is not so common in old age as during senescence. It is possible that many factors are responsible for the onset of malignancy, and that unless they are present in correct combination and hit upon a cell which has sufficient vitality to respond they will be ineffectual.

Irritation.

The next factor which plays an important, if not an essential, part in the development of the disease is irritation. Chronic irritation is always associated with an attempt at repair, and healing means the presence of leucocytes and lymphocytes. These two elements are also usually present in large numbers in cancerous growths. Where there is chronic irritation there must also be cell destruction going on with its attendant products of katabolism, so that irritation will produce locally the product which may predispose to the disease, and, supposing that this substance is also present in the body fluids owing to senescence, it will occur in great excess at the seat of irritation.

Bashford lays much emphasis on the point that cancer is a disease which originates in a circumscribed area. We consider it possible that it may begin in a single cell. Apart from the predisposing influences of mechanical and long-continued pathological irritation, it must be remembered that certain chemical irritants undoubtedly favour the onset of the disease more than others, especially some coal-tar products.

Excitation of Reproduction.

We know very little about the influences which control cell reproduction in the body. It is difficult to imagine that it is automatic in each individual cell, and we do not know how much nervous influences have to do with it, but we shall show presently that the reproduction of human cells can be caused by chemical agency, and it is possible that the normal balance may be maintained by something of this nature. If our suggestion is at all correct, that some product of katabolism favours the onset of cancer, it may do so by in some way accelerating the reproduction of cells. This cannot be due to mere mechanical irritation, which, we all know, does not necessarily lead to cancer, or even to tumour.

Death.

There are two more axioms which are worthy of serious consideration in relation to our search for the cause of cancer, and the first of these is that it causes death. Benign tumours do not lead to death, as a rule, but if the progress of a malignant one is not successfully interrupted by surgery, it almost invariably leads to a fatal termination.

Why should death occur in the one instance and not in the other? It will occur in cancer irrespective of the presence of metastases, or even of the relation of the growth to vital structures, and we speak of death resulting from those vague conditions styled exhaustion and cachexia.

Bashford,[10] in his address before the Medical Congress at Budapest, indicated his belief, so we understand, that in cancer "there is no evidence of toxic products injurious to the hosts," and that "death is not due to poisons." He points out that in experimentation with mice, when the tumours have exceeded certain sizes, the growths live at the expense of their hosts. But surely this is not applicable to men, who, unlike mice, do not develop pendulous cancers of large size. It has been shown in former papers[8 11] that there appears to be no poison in the peripheral blood of cancer patients which shortens the lives of polymorphonuclear leucocytes which are susceptible to infective toxins, but this does not show that no poison is causing the death of cancer patients. General cell death must be extensive in the later stage of the disease, as evidenced by the wasting and cachexia, and at present it is difficult to avoid the suggestion that some poison promotes dissolution. One may feed a cancer patient *ad libitum*, yet he will die. The problem of the cause of death is a difficult one, on which artificially induced reproduction may throw some light.

Cancer is a Disease which Aggravates Itself.

Our last fact is that cancer is a disease which aggravates itself. We have evidence of this in the circumstance that the disease begins in a circumscribed area, possibly in a single cell in that area, and that if the area is removed the patient may recover.

It is usually supposed that cancer having started, say, in a single cell which divides, the two daughter cells are also cancerous, and that the growth of the cancer takes place in this way. Again, the metastases of cancer are generally supposed to result from embolisms derived in the first place from the circumscribed area in which the growth begins, but if these secondary deposits so-called were always due to embolism, one would expect them to occur at the onset, as well as during the advanced stages of the disease, and we might also ask the question, Why does embolism practically only occur in *malignant* growths?

There is yet another possible way in which the disease may progress, a speculation based on the remarkable fact that a growth appears to confer protection against other growths experimentally planted. This fact has been shown by the Imperial Cancer Research. The protection is presumably due to the formation of antibodies in the body fluids, and these antibodies must be formed against *something* produced by the living growth, for a dead growth, or an extract of a growth, will not confer protection. Hence, it is reasonable to suppose that the living cancer cell may be secreting or otherwise producing a substance which either aggravates the cause of cancer or assists the normal cells to respond to it more readily.* This speculation was borne out by the fact that we found that the excitant for leucocytes which is present in the blood of these patients is found also to a greater extent in the juices of the growth.[8] Presumably, if a substance is secreted by a cancer cell, it will first be absorbed by its neighbours, and will pass also into the lymph spaces, and so on to the lymphatic channels and glands which have so remarkable a tendency to become infected. The larger the growth becomes the more secretion will be produced, each secondary growth contributing to the ingravescence of the trouble. On this suggestion one may explain why cancer so frequently spreads eccentrically, in contradistinction to any of those growths which spread concentrically, or only by reproduction of the original cells. Lastly, the aggravating substance may assist to cause the death of the patient.

The question may now be asked, "Why is it that when a growth is completely removed it sometimes does not recur, although the cause of the original growth is still

* It should be remembered that the transplantation of a dead growth, or an extract of a growth, will not cause cancer.

present?" Why does not a recurrence invariably take place immediately in the healing and irritated scar? This is also probably a question of antibodies. Presumably, if the growth produces something which favours the aggravation of cancer, antibodies are also produced against that something, and when a growth has been removed these antibodies will remain in excess of the original cause of the disease, and the amount of the antibody in the blood may account for the longer or shorter period which elapses before recurrences take place.

These, then, are our axioms and theories. We are aware that it is dangerous to theorize, but it is impossible to undertake a cancer research without having hypotheses on which to work. Our endeavour has been to keep to theories which are as reasonable as possible and in accord with known facts.

Former Researches.

It has been shown by Galleoti and Hertwig, and Farmer, Moore, and Walker, and others who have been in the field of research, that irregular mitoses frequently occur in cancer cells, and Farmer, Moore, and Walker,[13] studying the irregular number of chromosomes in cancerous and other cells, described how the former resemble the reproductive rather than the somatic type, frequently showing the maiotic divisions with 16 chromosomes instead of the somatic number of 32. They also pointed out how the longitudinal splitting of the chromosomes is a characteristic of the first (heterotype) maiotic phase, and that cells undergoing these mitoses may show "sinaptic contractions." These observers also suggest that leucocytes may be ingested by cancer cells, and that a combination of the chromatin of the two cells may play a part in the onset of the disease. The intracellular Plimmer's bodies are said (by them) to be identical with the archoplasmic vesicles, which together with archoplasm are said to be characteristic of reproductive cells, and appear in the first maiotic division. Walker[14] also suggests that all leucocytes are of the reproductive type, and have a reduced number of chromosomes. He describes archoplasm in them. Unfortunately he does not distinguish between the different varieties of leucocytes, and as far as we can gather he examined leucocytes from the internal organs for the most part.

Benjamin Moore[15] has shown that the alkalinity of the inorganic constituents of the blood plasma in cancer is increased. He also states that "irritation and inflammation are accompanied by increased alkalinity of the lymph which is a factor in stimulating cell growth." It should be remembered in this connexion that alkalis accelerate the diffusion of substances into cells.[15]

H. Becton, in a paper read before the Pathological Section of the British Medical Association at Belfast on July 28th, 1909, remarked upon the absence of Altmann's granules in the cells of malignant tumours, although in innocent growths and usually in normal cells they can be found. This is an important point which we can confirm, and we can also testify that it is true, in spite of the fears entertained, so we understand, by Professor Lorrain Smith, that the appearance or absence of the granules may depend on the fixative used, because we employ no fixatives.

An Artificial Excitant by which Leucocytes can be Stimulated to Extrude Pseudopodia.

In a former paper[4] one of us recorded a remarkable excitation of amoeboid movement which occurs in leucocytes, even at low temperatures, when they are placed on a jelly film containing polychrome, methylene blue, and atropine.* The stain is the important part of this excitant, as it can be made to be effectual if no atropine is present, but atropine and some other alkaloids accelerate its action. The action of this exciting jelly is very constant provided its index of diffusion is correct for the leucocytes, in which case the *cytoplasmic* granules of the polymorphonuclear and eosinophile cells will stain while the cells are actually extruding and retracting pseudopodia. In this respect they differ from lymphocytes, which while under the influence of the excitant are the most amoeboid of all the cells, but they will not continue to show movements after all their *nuclear* granules have stained.

* Since this paper describing this excitant was published, it has been ascertained that Professor Osler many years ago noted that certain alkaloids and curare increased amoeboid movement.

An Excitant for the Leucocytes of Healthy Persons found in the Plasma of Cancer Patients.

In a paper in the *Proceedings of the Royal Society of Medicine*[8] we pointed out how normal leucocytes, when mixed with the citrated plasmata of a series of cancer patients, appeared to show, under suitable conditions, the same remarkable exaggeration of amoeboid movement as they do when the stain and atropine jelly is used. Control experiments did not demonstrate the same marked movements. Hence we conclude that there is in the blood in cancer some substance which, in effect, resembles the methylene blue and atropine excitant. To distinguish these excitants we call the combination of stain and atropine the *artificial* excitant, and that found in cancer plasma the *pathological* excitant.

The Flagellation of Lymphocytes in the Presence of Both Excitants.

In a subsequent paper[7] we showed that flagellation of lymphocytes takes place when blood is mixed either with the artificial or with the pathological excitant found in cancer plasma. The flagella, which can be watched during the whole process of extrusion, are filamentous and usually have a dot of chromatin at their ends. They break off in time, and in our description of them we speculated that they might be spermatozoa. They certainly resemble the flagella of malarial parasites, but we have now reason to believe that our speculation was erroneous.

Experiments.

Pathological Excitant Concentrated in Juices of Malignant Growths.

We have previously referred to the fact that the pathological excitant seems to exist in a more concentrated form in the juices of malignant growths than in the peripheral circulation.

We have investigated this by expressing the juice, citrating it, and mixing it with a small quantity of fresh blood. In most cases the leucocytes responded readily and extruded long pseudopodia. Furthermore, we have found that if some blood is squeezed from a growth immediately after it has been removed, and spread upon a jelly film containing stain and alkali but no atropine, the leucocytes sometimes show exaggerated movements which normal leucocytes will not do on such a jelly.

These experiments suggest that the excitant is actually being produced in some way by the growth itself. It must be remembered, however, that we have found it in the peripheral plasma of persons who only have had very small growths. In addition to demonstrating the presence of an excitant in the plasma, these experiments have also elicited the fact that cancer juice lowers the coefficient of diffusion of normal leucocytes considerably.

An Investigation of the Nature of the Artificial Excitant.

Since this excitation of amoeboid movement appears to be associated with malignant disease, and since in effect it resembles the action of the artificial excitant, the following experiments were made to ascertain whether this excitation increased phagocytosis. The artificial excitant being so constant in its action was the most suitable one to investigate. A suspension first of typhoid bacilli and then of staphylococci was made in citrate solution. To one portion of each of these the correct proportions of atropine and methylene blue were added, thus producing a liquid form of the artificial excitant.[9] Some fresh blood was mixed with both portions, and they were kept at 37° C. for fifteen minutes. The number of bacteria ingested by the leucocytes was counted by the usual methods and by *in vitro* staining, many samples being observed, and the averages showed that the excitant certainly did not increase phagocytosis, and in many instances it seemed to delay it.

Secondly, we placed a mixture of leucocytes and bacteria on jelly which excited the leucocytes. It was noticed that the pseudopodia were extruded without regard for the bacteria, and if a pseudopodium happened to impinge against a bacterium, the latter was usually pushed out of its way. This experiment has often been repeated, and in the presence of the excitant we have never seen the time-honoured engulfing of bacteria by a leucocyte.

Mr. Simpson, who at that time was one of the Residents at the Royal Southern Hospital, suggested an ingenious experiment to test whether the extrusion of pseudopodia was due to a chemotactic action. Two jellies, one containing the excitant and the other only sodium citrate and sodium chloride, were boiled and allowed to run together on a slide, and a drop of blood under a cover-glass was placed over the junction of the two jellies. If the excitant was a chemotactic one, it was presumed that the cells would throw out their pseudopodia in the direction of the excitant. But they did not do so, for their excitation depended on the amount of excitant they absorbed, and not upon any chemotactic action, for as often as not they thrust out their pseudopodia in a direction remote from the jelly which contained the stain and atropine. Hence these experiments did not explain the nature of the excitant, but showed that it did not increase phagocytosis.

The Cytology of the Lymphocyte.

The cytology of the lymphocyte concerns us very immediately in connexion with this research. These cells differ from other forms of leucocytes in the facts that their nuclei are single, and that they do not contain Altmann's granules in their cytoplasm. But lymphocytes do contain granules arranged on the walls of their nuclei, and these granules give the chromatin reaction with stain. When a polymorphonuclear leucocyte dies, its cytoplasmic (Altmann's) granules show Brownian movement owing to liquefaction of the cytoplasm. The nuclear granules of the lymphocyte under the same conditions remain immobile. When fixed and stained by the older methods the granules of the latter cell merge into the nucleus, which appears as a homogeneous chromatin-staining mass, or the chromatin is arranged as a spireme. By *in vitro* methods the nucleus consists of a transparent membrane studded with chromatin granules. Within the nucleus there is always one, and sometimes more than one, "ring." These rings also stain, as if they were composed of chromatin, and have been described as nucleoli. In a former paper[7] we have stated that we have on a few occasions seen these rings lying outside the nuclear wall, and we therefore suggested that they might be centrosomes. Seen normally, however, they are within the nucleus.

The Examination of the Cells of Growths by In Vitro Staining.

The examination of the cells of growths by *in vitro* staining has furnished us with some interesting facts. Small portions of the growths were scraped or teased out in a drop of citrated solution on a cover-glass, which was then inverted on to the film of jelly. The tissues were always examined as soon as possible after removal, and those parts of the growth from the extending edge were examined as well as others from the centre of the mass. Jellies with different indices of diffusion were employed, and at first it was difficult to say which of the cells could be styled cancer cells, but it was soon discovered that in every growth there were a large number of cells which had a coefficient of diffusion of about 14, which is the same as that of a lymphocyte, whereas the same jelly would not usually stain ordinary epithelial cells.* No matter what part of the body the growth was taken from (breast, uterus, stomach, rectum, floor of mouth, and tongue),† these cells were invariably present, and showed many characteristics in common. They might have different shapes, but they were very large in size and nearly all contained a large round nucleus, and within the nucleus were rings similar to those seen in lymphocytes. Each one, however, usually had more than one ring, and sometimes had as many as six. They contained no cytoplasmic granules,‡ but only nuclear granules like lymphocytes. In point of fact they resemble huge lymphocytes. In some growths these cells formed the majority, and we noticed that it was practically in them alone that archoplasmic vesicles and archoplasm were to be seen.

* Some further experimentation is required with reference to the coefficient of the other cells.

† Only specimens proved to be carcinoma by the older methods were employed.

‡ When these experiments were made we were not aware that Becton had already arrived at the conclusion that Altmann's granules are absent in cancer cells.

Archoplasmic Vesicles (Plimmer's Bodies) and Archoplasm, and Their Relations to the Casting out of Chromatin by the Cells.

Plimmer's bodies are said to be identical with archoplasmic vesicles. They consist of rounded, deeply staining bodies lying in the cytoplasm. They stain as if they were composed of chromatin, and often appear to contain short rods or dots of chromatin. We have also seen what appear to be chromosomes lying in pairs free in the cytoplasm. As a specimen is watched, the vesicles become more homogeneous, and then appear like diffusion vacuoles (red spots). Archoplasm is a patch of cytoplasm, which also stains scarlet. We believe that the vesicles are the chromosomes cast out from the nucleus, and which have collected together in the cytoplasm to form an archoplasmic vesicle. The vesicle then appears to liquefy, and the chromatin diffusing through the neighbouring cytoplasm gives the picture of archoplasm. The suggestion that the "cancer bodies" were derived from chromosomes originally came from Borel in 1893, but was disputed by Benda on the ground that chromosomes coexist with the vesicles. We do not think that this is sufficient to disprove that the vesicles and archoplasm arise in the manner above stated, and we wish to uphold Borel's hypothesis. The striking resemblance of the vesicles and archoplasm to chromosomes and diffusing chromatin is well shown by the *in vitro* method. Ultimately it is possible that the chromatin is shed and diffuses out of the cell. If this is the case the cells may be extruding chromatin, and a growth may produce a considerable quantity of it.

A Suggestion by Professor Harvey Gibson.

Professor Harvey Gibson made the important suggestion that it might be useful to experiment with nuclein in cancer, and he founded this idea on the well-known fact that in the sexual generation of the normal alternations of generations of plants the nuclei have only half the number of chromosomes which are present in the nuclei of the asexual generation, and that what is normal in the plant appears to resemble what is pathological in the human being's cancer cells. It is thus suggestive that a cancerous growth might be looked upon as consisting of abnormally induced "gametophytic" or sexual tissue. Professor Gibson, with this in his mind, suggested that it might be possible by some means to induce the nuclei deficient in nuclein to absorb more, and so get back to the normal somatic condition. Farmer and others have shown that it is possible to induce such changes in the tissue of ferns, and for many months one of us (C. J. M.), acting on this knowledge, treated some cancer patients with nuclein, which was made by Professor Reynolds Green, but without proof that it conferred benefit. We, however, determined to experiment with it on individual cells. As a matter of fact, H. Gibson considered that the experiments, which will presently be referred to, rather lead to the belief that there is some irritant at work which causes the cells to throw out their chromosomes in the way that we shall presently explain, and that this would correspond very closely to what takes place abnormally in ferns when the asexual generation with the $2x$ number of chromosomes gives rise to a prothallus, or gametophyte, directly with the x number of chromosomes.

The Effect of Nuclein on Leucocytes.

Dr. Reynolds Green very kindly supplied the nuclein. It is a brown powder, which is only sparingly soluble in water. A saturated solution of it was made in citrate solution, and a volume of it was added to an equal volume of blood. It was found that it lowered the coefficient of diffusion of the leucocytes considerably in a few hours, but did not markedly shorten their lives. The solution was then mixed with stained jelly, and leucocytes were examined on it. After twenty minutes' incubation of the slide at 37° C., some curious deeply staining bodies sometimes appeared in the cytoplasm of the cells, but their appearance was not constant.

The Effect on Leucocytes of a Solution Supposed to Contain Chromatin.

The effect of nuclein in lowering the coefficient of diffusion of leucocytes was striking when it is remembered that the juice from a growth also has this effect;

and, again, that the blood cells of cancer patients usually show a lowered coefficient of diffusion. But nuclein was too insoluble to enable us to experiment with it in any variety of concentration. We have already indicated that cancer cells appear to secrete chromatin, and since, as has been suggested, the aggravation of the disease may be due to some secretion from the growth itself, with a view to investigating the effect of this substance on leucocytes, we laked some blood with water and tried the filtrate, assuming that it contained the chromatin of the ruptured leucocytes. It was citrated and mixed with fresh living leucocytes as before. Again the lowering of the coefficient of diffusion was apparent.

Chromatin of Lymphocytes.

Our next step was to experiment with an extract supposed to contain the chromatin of lymphocytes. We were led to this partly because lymphocytes exist in such large numbers in cancerous growths as well as in irritated tissues, but also owing to the fact that we had observed that the chromatin of cancer cells seems to be arranged in a manner similar to that of lymphocytes, and because it is through the lymphatic channels and glands that secondary infections frequently take place.

The small prevertebral (haemal) glands of lambs supplied the lymphocytes. These glands are composed almost entirely of lymphocytes floating in a viscous fluid. To obtain the chromatin we adopted a principle based on the phenomenon of achromasia. In a former paper[2] it was suggested that achromasia may be due to the chromatin passing out of the dead cells as they become disorganized. It is accelerated by heat and the presence of salts. We therefore mixed up a large number of broken up haemal glands—which were removed from the lambs immediately they were slaughtered—with a solution containing 3 per cent. sodium citrate and 1 per cent. sodium chloride. The mixture was kept at 60° C. for twenty-four hours. This, of course, killed the cells, and they soon became achromatic. The mixture was then filtered, and the filtrate, a yellowish-brown liquid, was again kept at 60° C. for twelve hours to sterilize it. Some blood was mixed in a capillary tube with an equal volume of this extract and incubated at 37° C. for three hours. A drop of the mixture was then examined on jelly which excites amoeboid movement in leucocytes.[4] It was found that the coefficient of diffusion of the leucocytes had fallen greatly—a greater fall than we had ever seen before except that produced by the action of morphine.[6] The nuclei actually stained on this jelly which will never stain the nuclei of normal leucocytes. But it was also noticed that the cells contained round or oval vesicles within their cytoplasmata. These vesicles could be seen before the cells stained; but as the stain diffused in, the vesicles became bright scarlet, and appeared to contain rods and dots like "Plimmer's bodies." Every leucocyte contained one or two of these bodies. As the specimens were watched, the vesicles appeared to liquefy, when they resembled large vacuoles (red spots). At first they were quite discrete, but on keeping the mixture of blood and extract in the incubator for a little time longer the leucocytes developed what appeared to be patches of archoplasm, diffuse scarlet-staining patches, resembling those seen in cancer cells. This experiment has been repeated many times, and the appearance of the vesicles is remarkably constant.

Unfortunately we cannot say that these vesicles are the same phenomena as those seen in cancer and reproductive cells. Farmer, Moore, and Walker give a warning that great care must be exercised in forming an opinion as to these bodies, and we can endorse this view. Leucocytes are supposed to be "reproductive" cells, and to undergo maiotic divisions, and archoplasm has been described as being present in normal leucocytes when examined by the older fixed film methods. We wish to state, however, that we have never seen anything in *normal living* leucocytes which we could possibly call archoplasm, and we certainly had never before seen anything like the vesicles or scarlet staining patches in the cytoplasm of leucocytes until they had been suspended in the extract. It was possible, however, that what looked like vesicles might really be ingested substances or bacteria. To eliminate this possible fallacy we therefore took every aseptic precaution, and filtered the extract most carefully before we repeated the experiment. Still, the vesicles and supposed archoplasm appeared. Again, the vesicles might have been diffusion vacuoles (red spots), although we had never seen these structures appear in the same way. The extract, therefore, was rendered neutral, and afterwards actually acid, and retried. Still the vesicles appeared, but no red spots appeared in control experiments which contained no extract. These experiments, however, did not prove that the extract produces archoplasmic vesicles, and we could think of no means of deciding the point. Still it was sufficiently promising to warrant our following the matter up, especially as it was coupled with the great lowering of the coefficient of diffusion of the cells.*

Supposed Chromosomes Lying in the Cytoplasmata of Lymphocytes under the Influence of the Extract.

We mixed up a small quantity of the extract with jelly which contained a little stain (4 units). This jelly had the correct index of diffusion to stain the nuclei of lymphocytes in ten minutes at the room temperature. On one or two occasions what appeared to be chromosomes were seen in the cytoplasm of a lymphocyte as the cell stained. They appeared as short rods, staining scarlet, and were independent of the nucleus, which was, of course, studded with granules. We could not be certain whether these rods were chromosomes.

The Excitation of Reproduction.

This last experiment was now repeated, but with a concentrated extract made of 50 grams of haemal gland chopped up in 50 c.cm. of the citrate solution and prepared as described above. A tube of jelly was made thus: To a tube containing 5 c.cm. of "coefficient jelly" 0.5 c.cm. of stain (5 units) and 0.8 c.cm. of alkali (8 units) were added, together with 3 c.cm. of the extract and 0.7 c.cm. of water. The jelly was boiled and a film prepared on a slide. A drop of fresh citrated blood from the finger was placed on a cover-glass, which was inverted on to the film. The endeavour was to stain the nuclei of the lymphocytes very deeply in ten minutes at 37° C. The jelly therefore contained an extra unit of alkali for the coefficient of diffusion of the cells, which is 14. This is the equation (where x is the 3 c.cm. of chromatin extract, which is alkaline and which contains 3 per cent. sodium citrate and 1 per cent. sodium chloride):

$$cf=(5s+8a+1.5x+7h+t)-(6c+1.5n)=15.$$

We may say now, although we found out the point later, that it is better to keep the slide at the temperature of the room for two minutes to allow the cells to come to rest on the jelly, and then to insert it in the incubator for about eight minutes.

The object of making this experiment was to see whether the lymphocytes, at their normal temperatures, would more readily show chromosomes in their cytoplasm. But the result was very different and surprising, for the majority of the lymphocytes in the specimen were found to be undergoing mitosis. Many of the figures were typical of the maiotic phase, the number of chromosomes never exceeded sixteen, and although the figures presented different aspects to the observer, the several phases of the phenomenon could usually be recognized quite easily. This experiment has been repeated many times, and if the jelly is correctly prepared, mitoses can practically always be seen in the lymphocytes. Thus we may say that the jelly contains a true cell reproducing excitant, for it must be remembered that, so far as we can ascertain, mitoses have never hitherto been seen in normal lymphocytes from the peripheral circulation, no matter by what methods they have been examined. There is another reason, however, for believing that the jelly contains a reproductive excitant, which is, that unless it is correctly prepared with an index of diffusion suitable for a cell with a coefficient of diffusion of 14 or 15, no mitosis will appear in lymphocytes however much of the excitant may be present, and the cells remain in their resting stage. Hence we may say that the jelly contains a substance which has an "auxetic" effect on lymphocytes, and the substance may be called an auxetic (*αὐξ*, multiplication or increase, and *ἑτικος*, an

* As a further control experiment we tried lymph which was obtained for us by Professor Sherrington, who kindly operated on a dog and tapped the thoracic duct. No vesicles or archoplasm were induced in the leucocytes by its action, nor did it lower their coefficient of diffusion to any great extent.

excitor).* Now these mitotic figures immediately directed our attention to some important points. Looking at a cell which presented its side to the observer, it was seen that it had become oval or hour-glass shaped. The first question asked was, What had become of the granule-studded nucleus and its nucleoli? It became apparent that the phantom nucleus had formed the spindle, the granules had collected together round the equator of this spindle and had divided into sixteen portions, which now appeared as chromosomes. At the poles of the spindle the nucleoli were seen, and these "rings" now appeared as the centrosomes. Cells in all the earlier stages of mitosis have been seen, and this is what occurs: The cell first becomes elongated. Then the granules at the poles open out, leaving a clear space through which the nucleoli emerge. The extrusion of the centrosomes pulls the phantom nucleus into the shape of a spindle. The granules curl outwards and towards the equator, where they collect as a solid belt of chromatin surrounding the waist of the spindle. In a cell which presents one of its poles towards the observer, it will be seen that the solid belt of chromatin divides usually into sixteen portions, each of which becomes semilunar shaped, with its points inwards and in contact with the points of its neighbour. Thus the cell presents the typical rosette. We are not quite certain about the next stage. On one occasion, certainly, the chromosomes appeared to be seen dividing longitudinally, but we should not like to state whether this is the rule.† Having divided into two, one portion of a chromosome travels up towards one pole, and the other portion to the other pole. The spindle becomes constricted in the centre, and the cell becomes hour-glass shaped. If the cell only contained one ring (nucleolus centrosome), a dot of chromatin took the place of the other.

We cannot describe what occurs after the separation of the chromosomes, because death overtakes the cell before the division is complete. This is the rule, although we have seen one exception, in which a cell had just divided, and even then the two daughter cells were dead. We cannot succeed in preventing this death, and it was because of it that we have been able to follow the stages of the mitosis, for, when it occurred, the chromosomes stained, and thus the figures were demonstrated. In every case, with the one exception, the cells have died in the act of reproduction, and they remain in the stage which we have described until they become disorganized and achromatic.

The Parts Played Respectively by the Stain and Chromatin Extract in Exciting Reproduction.

The appearance of the nucleoli at the poles of the spindles led to the discovery of a fallacy in the last experiment. We remembered that we had already seen on two or three occasions the "rings" lying outside the nuclear wall in the cytoplasm. This fact was mentioned in a former paper[7] published nearly a year ago, and at that time we certainly had never used the chromatin extract. The suspicion was therefore aroused that we had already seen the early phases of mitoses although we had been unaware of the fact. In the early days we had been using a jelly which only contained stain and atropine; and, since this mixture is an excitant, we made a fresh jelly which contained concentrated artificial excitant and no chromatin extract. To our surprise we found that at 37° C. this artificial excitant containing stain and atropine is itself an auxetic. We next found that the atropine could be dispensed with if 10 units of stain were employed. We then repeated the experiment by which we first recognized the mitoses, employing only the 5 units of stain but omitting the chromatin extract, when it became evident that this low concentration of stain did not cause reproduction. Hence it is clear that 10 units of stain *per se* is a reproductive excitant; that 7 units of stain *plus* atropine has a similar effect; that 5 units of stain *per se* is not sufficient to cause it, but that 5 units of stain *plus* chromatin extract promotes the mitotic figures in a marked degree.

Our next step was to try a jelly which contained extract but no stain, and, as far as could be seen, no effort at reproduction occurred, for the cells did not become oval or rosette shaped.

Thus stain contains an auxetic but chromatin accelerates its action markedly, for the combination will cause reproduction even if a very small quantity of stain is employed, which could not of itself cause the mitotic changes.

* This term was suggested by Professor Harvey Gibson, and is more correct than the word "aphrodiziac," which had been thought of.

† An important point. Longitudinal division is said to be characteristic of the first (heterotype) maiotic phase.

Summary.

We have here placed on record some facts regarding a chemical substance which causes a remarkable train of events when it is absorbed by human lymphocytes in that it promotes, first, excitation of amoeboid movement, then reproduction, and, lastly, death. These events are closely related to each other, and follow in quick succession under the experimental conditions. More than a year ago the fact was noted that there appears actually to exist in the body fluids of persons suffering from carcinomata a substance which causes the first of these events in the chain—namely, the excitation of amoeboid movements. When it is remembered that the excitation of reproduction and death constitute two of the cardinal facts known about cancer—for the cause of cancer, whatever it may be, must be an excitant of cell reproduction, which ultimately leads to the death of the individual—the inference may be drawn that this first event in cancer may be followed by the succeeding ones, reproduction and death, which are produced by the artificial substance under the microscope. Although this chain of events occurs on the slide in the space of a few minutes, it must be borne in mind that the conditions are experimental in the extreme, and must be most harmful to the vitality of the cells. In the body, however, similar events, supposing such to exist, would probably be spread over several generations of cell-life in their occurrence, and a much smaller quantity of the exciting agents would be required to bring about the same delayed results.

By way of recapitulation of the points which we have set forth in this report, may we once more direct attention to the main facts? A mixture of methylene blue and atropine excites amoeboid movements in leucocytes. So does the blood of a cancer patient. The same mixture will cause lymphocytes to extrude flagella with a particle of chromatin at their ends; so will the plasma of a cancer patient. We have shown that an extrusion of chromatin also appears to be a phenomenon which occurs in cancer cells, and that cancer cells appear to produce "something" which aggravates the disease. It is possible that this "something" is chromatin, and in support of this theory is the fact that an extract which probably contains chromatin or a derivate of it accelerates the action of the artificial auxetic. The deduction is that this chromatin thrown out by the cancer cells may be the element which, by affecting some other unknown substance, may promote a repetition of the changes which cause the three events in the chain to which we have referred. The promoter of the first of these events (excitor of amoeboid movement) has already been described as existing in the blood of cancer patients, and to a greater extent in the juice of a growth. If chromatin, or a derivative of it, is the "something" which aggravates the disease, in order to produce a chain of events similar to that which has been observed in lymphocytes, it will have to aggravate the action of a substance resembling in effect that contained in the aniline dye which causes first reproduction, and then death. It may also be noted that chromatin is a product of katabolism which, as has been suggested, may predispose to the disease in persons over the age of 40.

Such are the hypotheses on which we are working. Experimentally one can induce mitoses in lymphocytes, and, as we have shown, these cells present characteristics resembling in many ways those appertaining to cancer cells. Cancer cells frequently show the first (heterotype) maiotic phase; but whether the mitoses induced in lymphocytes are of the first gametic variety remains to be proved. We are not certain yet whether the lymphocyte is normally of the somatic or of the reproductive type. Still, the chain of events is striking, and worthy, we think, of further investigation, which must now be directed to solve the reason for the premature death of the cell, for it would appear that some virulent poison must be at work within the cell to cause it to die in the height of its reproductive activity. This problem now becomes a cytological one,

which should be elucidated as a preliminary to further experimentation.

The research which we have conducted has shown that the actual phenomena of mitosis in human lymphocytes can now be demonstrated. The remarkable differences between these cells and the other leucocytes are now apparent. Lymphocytes respond to the auxetic and endeavour to reproduce themselves, whereas leucocytes do not. The cytoplasmic (Altmann's) granules of leucocytes can be stained without harm to the lives of the cells. The nuclear granules of the lymphocytes, on the other hand, are composed of chromatin, and somatic death occurs when they stain. The fact that the nucleoli of lymphocytes form the centrosomes is also interesting, but not unique, from a cytological point of view.

In concluding the present report, we may mention that extracts from organs other than haemal glands are effective in assisting to promote mitotic changes—for instance, suprarenal gland and the udder of a ewe—but thyroid gland and udders of lambs do not appear to contain the necessary accelerator of reproduction, and, furthermore, they do not prevent it. The mitoses seen when chromatin extract is used sometimes show a remarkable "lop-sided" appearance, but we have been unable to satisfy ourselves that this was connected with sinapsis, although suggestive of it. In performing the experiments to produce the mitoses which we have described care and accuracy in carrying out details are essential, for unless the alkalinity of the jelly is correct and the temperature accurate no mitoses will be seen, and the cells will remain at rest. The mitoses occur only at a temperature of 37° C., and in the few moments which immediately precede death and the staining of the chromosomes.

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THE DIAGNOSIS OF MALIGNANT DISEASE BY MEANS OF THE ANTITRYPTIC INDEX.

BY

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By the antitryptic index is meant the power of inhibiting tryptic digestion possessed by any given serum, compared with such inhibitory power possessed by a normal standard serum; or, in other words, the ratio of the powers possessed by different serums for neutralizing tryptic ferments.

Dr. F. L. Golla,[1] in a paper on the clinical value of the antitryptic index in tuberculosis, pointed out that the variations in the antitryptic powers of serums were not only interesting laboratory phenomena but could be applied for clinical and diagnostic purposes. He employed the electrical conductivity method introduced by Victor Henri for the study of ferment action, and it is this method that I have used throughout, employing the technique described by Dr. Golla in his paper.

Mr. E. C. Hort in the same month published a paper[2] on a chemical method for estimating the antitryptic index, especially in relation to diagnosis of malignant disease. In July, 1909, Mr. Hort read a paper before the British Medical Association at Belfast on the diagnosis of cancer by examination of the blood. Here also he used the chemical method, and found that the antitryptic index was raised in 94 per cent. of cases of malignant disease.

Dr. Golla, Mr. Hort, and myself, working independently, have observed that most processes involving cell destruction, whether bacterial, mechanical, or cytolytic, produce a raising of the antitryptic index. The phenomenon can, therefore, be in no way regarded as specific, but this lack of specificity, though it narrows the scope of the reaction, still leaves an ample margin where its utility as an aid to diagnosis in malignant disease is clearly shown.

Thus, in the absence of bacterial infection symptoms of obstruction or pressure accompanied by a raised antitryptic index would indicate the presence of a malignant rather than a benign growth or aneurysm, and a normal index would contraindicate the presence of malignant disease.

It has been observed that the serum of cases of gastric ulcer give a nearly normal reaction, and a diagnosis between this condition and carcinoma of the stomach can therefore be facilitated by the antitryptic test.

Perhaps it may be useful to give a few more details as to quantities than were mentioned in Dr. Golla's paper. I have used 5 c.cm. of the formalized casein solution, 0.5 c.cm. of serum, and 2.5 c.cm. of a fresh and filtered, roughly 10 per cent. solution of pure active pancreatin. The observations were made after the mixture had been in the thermostat ten minutes and four and a half hours, which I found to give the maximum of variation. All results were corrected for the different electrical capacities of the bottles, and the majority of the estimations were determined in duplicate. Instead of expressing the index as Dr. Golla has by + and − signs, I have used the same notation as that employed for the opsonic index and taken 1 to express normal, so that an index expressed by Dr. Golla's + 0.6 is in my notation 1.6 and one of − 0.6 is 0.4.

My results confirm those obtained by Mr. Hort with the chemical method, but as the chemical method depends on the matching of shades of colour, I think that the electrical method, which registers quite clearly and unmistakably very minute differences in the amount of digestion, will be found to be both the more reliable and easier for those without very much practical chemical experience.

Dr. Golla has lately introduced a new method by which he estimates the antitryptic index by means of the viscosity of the serum; but as the estimation of rate of flow requires accurate measurement of quantity, space, and time, there is ample opportunity for errors in observation in unskilled hands. With the electrical method, however, providing that the bottles are standardized sufficiently often, there seems to be but little opportunity for experimental error.

	Site of Cancer.	Antitryptic Index.
1.	Carcinoma of cervix	1.58
2.	,, ,,	1.4
3.	,, ,,	1.17
4.	,, ,,	1.63
5.	,, ,,	1.63
6.	,, ,,	1.33
7.	,, ,,	1.6
8.	Carcinoma of the uterus	1.22
9.	,, ,, ,,	1.6
10.	Carcinoma of the breast	1.25
11.	,, ,, ,,	1.48
12.	,, ,, ,,	1.45
13.	,, ,, ,,	1.05
14.	,, ,, ,,	1.21
15.	,, ,, ,,	1.72
16.	Carcinoma of the rectum	1.42
17.	,, ,, ,,	1.37
18.	,, ,, ,,	1.63
19.	Carcinoma of the lip	1.06
20.	,, ,,	1.4
21.	Carcinoma of the penis	1.31
22.	Carcinoma of the antrum	0.67
23.	Carcinoma of the larynx	1.57
24.	Carcinoma of the intestine	1.4
25.	Carcinoma of the sigmoid	1.4
26.	Carcinoma of the stomach	1.69
27.	Carcinoma of the tongue	1.09
28.	Carcinoma of the bladder	1.37
29.	Carcinoma of the nose	1.68
30.	Carcinoma of the soft palate	1.6

Of the 30 cases of cancer that I have given above, 26 (86 per cent.) show a markedly raised index. Of the remaining 4 cases, 3 (13, 19, 27), = 10 per cent., show practically normal indices, and one (22) shows a subnormal index. This case was a very advanced one, and died before I had the opportunity of obtaining another specimen. The section showed the tumour to be an epithelioma. Of the 3 cases showing normal indices, No. 13 was an early case ten days after operation; No. 19 was an early case before operation; and No. 27 was awaiting removal of the tongue.

If bacterial infection is present, this method at the moment cannot claim any great diagnostic value, but in the absence of such infection its great help in affording a diagnosis between malignant disease and gastric or intestinal ulcers, non-malignant strictures, aneurysms, non-malignant conditions of the bladder (such as stone), or non-malignant pelvic conditions in the female, is apparent. The negative evidence afforded by a normal antitryptic index is also of very great value in excluding malignant disease.

My thanks are due to Dr. Lunn and Dr. Roper, of the St. Marylebone Infirmary; Dr. Potter, of the Kensington Infirmary; and Dr. Coulson, of the St. George's (Hanover Square) Infirmary, for their kindness in giving me access to their cases.

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AN INVESTIGATION OF SERRATUS MAGNUS INFECTION IN CANCER OF THE BREAST.

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IT has been my misfortune during a period of more than two and a half years to record the notes of 75 cases of recurrent mammary cancers. The unhappy victims have come from well-known hospitals in London and the provinces, and many of them have been operated upon by surgeons of the very highest reputation, yet recurrence has taken place quickly or slowly in a diffuse "cuirasse" or discrete nodular form. Granted that a certain number of these cases were, at the time of operation, not very advanced, it becomes evident that in some way or other the "radical" operation was not radical enough.

The observance of a number of cases which presented nodular recurrences about the lower half of the scar led me to believe that in certain instances such recurrences might be due to the almost invariable practice of leaving intact the serratus magnus muscle, perhaps already infected by outlying extensions of growth.

Whilst removal of the pectoralis major is now an accepted routine, and removal of the pectoralis minor is a debatable point, scant attention has been paid to the serratus magnus, a muscle which from its anatomical relation to the breast demands the closest investigation. Both Sir Henry Morris[1] and Handley[2] advocate occasional removal of portions of this muscle, not, however, with quite that emphasis which on anatomical grounds would appear imperative. So far as I am aware, no microscopical evidence has been adduced as to the infection or non-infection of this muscle in certain cases of mammary cancer, and it was to gain evidence on this point that this research was carried out.

It is an anatomical fact that normally one-third of the female breast lies on the fascia over the serratus magnus. This corresponds, in the main, to the lower and outer third of the breast, and to the digitations of the muscle arising from the fifth and sixth ribs.

It is uncommon for the lower limit of the breast to reach below the level of the sixth costal arch. The four lowest digitations of the muscle at their origin are covered only by fascia and skin, and in the female the fifth and sixth digitations are covered also directly by the normally developed breast. Above this level the breast lies almost entirely upon the pectoralis major. It is not unusual for the breast to have more extensive margins than is apparent, and to have outlying isolated portions; but it is probable that, in the very large majority of cases, no portion of the organ lies directly upon the upper serrations of the muscle. The field of inquiry was thus limited to the lower serrations, especially those directly underlying the breast—namely, those arising from the fifth and sixth ribs. The muscle is naturally divisible into three portions:

1. A muscular bundle from the first and second costal arches, which is inserted into the ventral aspect of the upper angle of the scapula.
2. A bundle from the second, third, and fourth ribs, which is inserted into the whole of the ventral aspect of the vertebral border of the scapula between the upper and lower angles.
3. A bundle from the fifth, sixth, seventh, and eighth ribs is inserted into the ventral aspect of the inferior angle.

The innervation of the muscle follows also this muscular and anatomical division, the three bundles being supplied, subject to occasional variation, by the fifth, sixth, and seventh cervical nerves respectively. I have proved to my own entire satisfaction that removal of the lowest bundle (from the fifth, sixth, seventh, and eighth ribs) does not impair the functional activity of the arm, nor the nervous supply of the upper two segments of the muscle, and it would appear that these two segments, with their extensive origin and insertion, are fully capable of carrying out the necessary scapular movements. Such removal is only a step further than the recognized routine of removal of the serratus fascia; it adds nothing to the difficulties of the operation, and takes but a minute or two to perform. The serrations can be detached from their origin, stripped back and divided close to their insertion. The lowest fasciculus of the pectoralis minor is a guide to the fifth rib.

In view of the proved fact that the pectoralis major is frequently infected by the "lymphatic permeation" of Handley long before any clinical observations of the attachment of the growth to the muscle beneath it can be demonstrated, it appeared reasonable to conclude that a similar infection might be shown to be present in another directly underlying muscle, and that, moreover, such an investigation might give some clue to the problem of recurrence. Though the results have been negative, it has seemed right to record the investigation as far as it goes, in the hope that the subject may be more fully pursued by others who also see a large number of mammary cancers.

The cases selected were all carefully picked from amongst some 150 mammary tumours successively admitted to the Cancer Hospital. These picked cases are only 8 in number, but in these 8 cases either the growth was lying directly over the serratus magnus, or the whole breast was involved, including that portion lying over this muscle. All the cases were submitted to operation, and in all the tumour was proved microscopically to be carcinoma. No inoperable case was investigated, as it was desired to exclude as far as possible any case in which the muscle might have become directly infiltrated by coarse invasion in contradistinction to lymphatic permeation; my object being to determine the condition of the muscle as regards infection while the growth was still operable.

At first cases were selected which showed no clinical evidence that the growth was tacked on to the fascia beneath it, but later, as no muscular infection could be demonstrated in these cases, others were investigated in which the growth had only a limited mobility over the serratus fascia.

My colleagues in their own cases were most kind in removing such portions of muscle as I required in the manner I wished. The method adopted was, as far as possible, to peel off the pectoralis major, serratus fascia, and lowest segment of serratus muscle in a continuous sheet. The relative position of the tumour, fascia, and muscle was then reconstructed, a selected portion hardened in the natural position of the parts, and a number of sections in series cut and examined. At this stage Dr. Alex. Paine and Dr. Kettle, of the Cancer Research Department of the hospital, afforded me most valuable help, for which I wish to express my gratitude and indebtedness to them.

In not one of the cases could any trace of cancer cells be found in a numerous series of muscle sections, although processes of cells were visible extending in the fascia right up to the muscle margin; nor was there any evidence of the irritative round-celled infiltration surrounding a cancerous lymphatic, nor any sign of a degenerated cancer plug, obliterated by a perilymphatic fibrosis.

These results are surprising, but, I believe, are destined to be reversed in the future. If there are lymphatics in the pectoralis major which communicate at an angle with those in the pectoral fascia, the same arrangement is more than likely to hold good in the case of the serratus magnus, and it will be found in the future to be a routine necessity to remove the "exposed" portion of this muscle in the

surgical treatment of those mammary cancers which overlie it. A more perfect technique will produce microscopical proof. Below is a short clinical report of the investigated cases:

CASE I.

At the extreme outer side of the left breast there is a very marked dimpling of the skin. Beneath and below this is a very hard, solid tumour with indefinite margins shading off into normal tissue, roughly the size of a plum. The nipple is not retracted, and the growth is not attached to the underlying fascia; one definitely enlarged hard axillary gland.

CASE II.

In March, 1907, a large, hard mass, the size of a Tangerine orange, had been excised from the lower and outer extremity of the left breast. In October, 1908, recurrence took place at the site of the scar in the shape of a mass, the size of a walnut, not attached to the skin or deep fascia. It lay external to the outer border of the pectoralis major. A chain of three very distinct hard enlarged axillary glands can be felt.

CASE III.

The left breast is the seat of a large, hard, prominent tumour, distorting and enlarging the organ, and *occupying its whole area*. The nipple is slightly depressed, and its summit is commencing to ulcerate, and there is very marked dimpling of the skin. The mass does not appear to be at all fixed to the deep fascia. Enlarged glands are present in the axilla.

CASE IV.

Beneath the left nipple and areola is a large, hard tumour of rounded outline and with well-defined margins, at least 2 in. in diameter, lying mainly towards the outer part of the breast. The nipple and areola are thickened, hard, and infiltrated by growth. The tumour is tacked on to the pectoral fascia and to the serratus fascia. One infected axillary gland is felt.

CASE V.

The right breast is much distorted by an indefinite hard subareolar growth, about 2 in. in diameter, which has caused deep and irregular dimpling of the skin and retraction of the nipple. The main part of the skin infection extends towards the outer edge of the breast beyond the edge of the pectoralis major. Below and external to the nipple is a small patch of cutaneous ulceration, secreting some thin serous fluid. There is very definite attachment of the tumour to the deep fascia, and one infected axillary gland can be felt.

CASE VI.

The left breast has been totally destroyed in its whole area by a large, offensive, fungating growth, 4 in. in diameter, definitely attached to the deep fascia. There is a mass of hard, enlarged axillary glands.

CASE VII.

The left breast is very large, prominent, and projected forwards by a large, very hard tumour the size and shape of a "halfpenny bun." The nipple is indrawn, and the skin of the areola is reddened, infiltrated, and fixed to the growth beneath. The tumour has a very definite edge and occupies practically the whole breast area, fully one-third of the mass lying on the serratus magnus. The growth is definitely tacked to the pectoral fascia, but this cannot be clearly demonstrated as regards the serratus fascia. Several hard, enlarged discrete glands are present in the axilla.

In this case, on examination of the specimen removed, an enlarged gland was found lying on the lower segment of the serratus magnus. I believe this gland is known to anatomists, but I have not previously identified it in the examination of a large number of breasts removed for cancer. Microscopically it was not infected by cancer cells, and no such infection could be demonstrated in the muscle underlying it.

CASE VIII.

At the outer extremity of the right breast is a hard mass the size of a goose-egg, adherent to the skin over it and causing retraction of the nipple. There is definite attachment of the tumour to the deep fascia beneath, and a mass of enlarged axillary glands.

This patient died a month after operation from pulmonary complications. At the *post-mortem* examination a piece of chest wall underlying the site of the tumour was excised for further examination. No cancer infection could be found in a large number of microscopic sections.

REFERENCES.

[1] Mitchell Banks Lecture, 1908. [2] *Cancer of the Breast.*

CANCER IN NEW ZEALAND.

BY

P. W. HISLOP, M.D.EDIN.,

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AND

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ALTHOUGH New Zealand has the lowest death-rate for the world, there is a persistent increase in the percentage of deaths from cancer.

In the year 1898 the deaths from cancer per 10,000 of living persons was 6.40, the percentage of total number of deaths due to cancer being 6.50. In 1907 the deaths from cancer per 10,000 of living persons was 7.33, the percentage of total number of deaths due to cancer was 6.70.

In the latter year, out of 10,066 deaths 674 cases were due to cancer, of which 361 were males and 313 females.

To show the increase in tabular form the following tables are taken from the report of the Public Health Department.

TABLE I.—*Showing for each of the Ten Years 1898 to 1907 the Number of Persons Registered as having Died from Cancer, the Proportion of Deaths from Cancer per 10,000 Living, and the Percentage of all Deaths attributed to Cancer.*

Year.	Estimated Mean Population.	Deaths from Cancer.	Total Deaths, all Causes.	Deaths from Cancer per 10,000 of Living Persons.	Percentage of Total Deaths due to Cancer.
1898	736,260	471	7,244	6.40	6.50
1899	749,984	468	7,680	6.24	6.09
1900	763,594	430	7,200	5.63	5.97
1901	777,968	515	7,634	6 62	6.75
1902	797,793	536	8,375	6.72	6.40
1903	820,217	582	8,528	7.10	6.82
1904	845,022	571	8,087	6.76	7.06
1905	870,000	565	8,061	6.51	7.02
1906	895,594	623	8,339	6.96	7.47
1907	919,105	674	10,066	7.33	6.70

The deaths from cancer in New Zealand and England are compared in Table II. The increase in the numbers for the sexes together for England and New Zealand is represented in the proportions below:

TABLE II.—*Deaths from Cancer in every 10,000 Persons Living.*

Year.	New Zealand.	England.	Year.	New Zealand.	England.
1881	2.69	5.20	1900	5.63	8.28
1886	3.68	5 90	1905	6.51	8.85
1891	4 68	6.92	1906	6 96	9.17
1896	5 50	7.64			

The relative percentage of deaths among males and females is shown by Table III.

TABLE III.—*Deaths from Cancer in every 10,000 Persons of Each Sex Living in New Zealand.*

Year.	Males.	Females.	Year.	Males.	Females.
1886	3.69	3 67	1903	7.51	6.63
1890	4.72	4.79	1904	7 23	6.23
1894	6.65	5.27	1905	6.79	6.18
1898	6.77	5 98	1906	7.10	6.79
1901	6.48	6.77	1907	7.41	7.25

To quote from the Departmental report:

The mortality was higher among the males than among the females (with the exception of 1890 and 1901), which is the reverse of English experience, where the rate was 7.94 per 10,000

of males and 10.32 of females for the year 1906. In the United Kingdom, however, the rate of increase is so much higher among males than with females that the Registrar-General calculates equilibrium will be reached in about the year 1932, and thereafter the rate among males would exceed the rate among females.

Table IV is drawn up to show the locality of the affected part.

TABLE IV.—*Deaths from Cancer, 1903 to 1907, New Zealand. Showing the Number of Deaths of Males and Females from Cancer during the Years 1903 to 1907, classified according to the Part of the Body Affected.*

Part Affected.	1903.		1904.		1905.		1906.		1907.	
	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.
Males.		Per Cent.		Per Cent.		Per Cent.		Per Cent.		Per Cent.
Mouth, lip, tongue, throat, neck, etc.	99	33.56	99	32.46	79	26.69	94	31.02	92	28.05
Stomach	96	32.54	107	35.08	107	36.15	104	34.33	98	29.88
Intestines, rectum	35	11.87	34	11.15	29	9.80	35	11.55	49	14.94
Liver...	35	11.87	42	13.77	49	16.55	44	14.52	58	17.68
Kidneys, bladder, urethra, etc. ...	17	5.76	13	4.26	25	8.45	18	5.94	17	5.18
Leg, foot, etc. ...	4	1.35	7	2.30	4	1.35	5	1 65	11	3.35
Lung...	9	3.05	3	0.98	3	1.01	3	0.99	3	0.92
	295	100.00	305	100.00	296	100.00	303	100.00	328	100.00
Not specified ...	30	—	18	—	17	—	34	—	33	—
Totals	325	—	323	—	313	—	337	—	361	—
Females.										
Mouth, tongue, throat, etc.	21	9.05	12	5.17	19	8.09	21	8.37	16	5.50
Breast	33	14.23	25	10.78	38	16.17	38	15.14	48	16.50
Stomach	51	21.98	55	23.71	51	21.70	42	16.73	47	16.15
Intestines, rectum	28	12.07	32	13.79	34	14.47	32	12.75	53	18.21
Kidneys, bladder	5	2.16	4	1.72	7	2.98	3	1.20	4	1.37
Ovary, uterus, vagina	48	20.69	58	25.00	49	20.85	68	27.09	73	25.09
Liver	38	16.38	35	15.09	27	11.49	42	16.73	39	13.40
Gall bladder, spleen, pancreas	4	1.72	1	0.43	4	1.70	5	1.99	6	2.06
Lung, spine, thigh, shoulder	4	1.72	10	4.31	6	2.55	—	—	5	1.72
	232	100.00	232	100.00	235	100.00	251	100.00	291	100.00
Not specified ...	25	—	16	—	18	—	35	—	22	—
Totals	257	—	248	—	253	—	286	—	313	—

By the last table it will be seen that the seat of cancer was:

In males:

Stomach and intestinal canal	...	44.82 per cent.
Mouth, lips, throat, neck	...	28.05 ,,
Liver	...	17.68 ,,
		90.55 ,,

In females:

Intestinal canal and stomach	...	34.36 per cent.
Gall bladder, spleen, pancreas	...	2.06 ,,
Mouth, tongue, throat ...	...	5.50 ,,
Liver	...	13.40 ,,
		,,
		55.32 ,,

Dr. Hislop has collected 31 cases of cancer which have occurred in one district in which he practises, and notes the fact that a large proportion of the patients were living in the neighbourhood of a certain water supply.

TABLE V.—*List of Cases of Cancer (Dr. Hislop).*

No. and Sex.	Age.	Seat of Disease.	No. and Sex.	Age.	Seat of Disease.
1. M.	55	Cancer of bowel.	16. M.	70	Rectum.
2. M.	65	Cancer of bowel.	17. F.	65	Breasts.
3. M.	56	Cancer of bowel.	18. M.	57	Bowel.
4. F.	55	Cancer of bowel.	19. M.	70	Stomach.
5. M.	65	Cancer of liver.	20. F.	57	Breasts.
6. M.	65	Mouth and throat.	21. F.	51	Breasts.
7. M.	45	Stomach.	22. F.	46	Liver.
8. M.	86	Stomach.	23. F.	62	Uterus.
9. F.	—	Bowel.	24. M.	72	Bowel.
10. M.	—	Bowel.	25. M.	56	Bowel.
11. F.	36	Breast.	26. M.	57	Liver.
12. F.	51	Caecum.	27. F.	39	Liver.
13. M.	48	Lip; epithelioma removed before cancer developed properly.*	28. F.	70	Liver.
			29. F.	53	Pancreas.
14. M.	70	Lip; later bladder and rectum.	30. M.	43	Rectum.
15. F.	46	Breasts first; liver later.	31. F.	70	Breast.

* Government pathologist's report.

From this list it will be seen that the alimentary tract was the seat of the invasion in the great majority of the cases.

In the male sex no fewer than 16 of the cases were in this locality; 11 occurred in the bowel, the exact situation in many cases being the caecum, splenic flexure, and descending colon, 3 were gastric, and 2 were rectal in origin. In the females, out of 14 cases, 6 were disease in the breast, 1 in the uterus, 3 in the bowel, 3 in the liver, and 1 in the pancreas.

The number of cases in which the alimentary canal was affected seemed to point to some exciting cause common to all the patients. To classify these as much as possible with reference to the district and houses in which they lived the accompanying map has been prepared.

It will be noticed that many of the cases occurred within a particular area. Dr. Hislop describes the nature of this area as follows:

Between a large snow-fed river and a smaller stream lies a flat tract of country extending in length for about ten miles to the foot of a hill, 5,600 ft. in height, the base of which was formerly, and is still to some extent, covered with dense native bush.

The breadth of the area varies, being about six miles across on the average. The lie of the land sinks slightly towards the middle, and then gradually rises towards the base of the hill, in which there are many gullies still showing native bush.

Originally this land was covered with tussock—the native grass—and in the more swampy parts with native flax and "nigger heads." Here in many places it was difficult or impossible to cross. The soil varies in many places from a light shingly nature to a stiff clay which holds the moisture and bakes in hot weather.

The nature of this country has now entirely changed, the land being now subdivided into farms, and ploughed; cereals and turnips being chiefly grown. Many belts of *Pinus insignis* and blue gums have been planted round the homesteads, and along the creeks willow trees have been planted.

The reason for referring to this district in its earlier state is because many of the cases lived in this country during its transition period, and several of them worked and assisted to bring the land under cultivation.

Creek.

Arising in the heart of the bush is a creek which winds through the country at a sluggish pace. In many places it is confined within well-defined banks, in others it spreads widely over the land, and irrigates the surrounding district in times of flood. After flowing for some five miles it is joined by another creek of much the same nature, which rises in the wooded gullies in the hills. Four miles lower down a third creek joins the main stream. This last creek rises from some springs which are situated in some land that was a swamp in the precultivation days. It is in this district, and especially along the line of the creek, that most of the cases have occurred.

Rainfall.

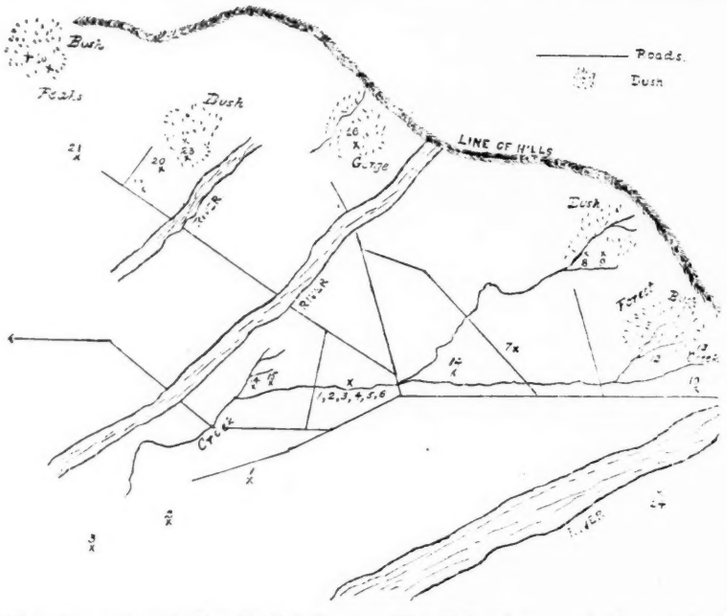
The average rainfall for the year in this area is over 45 in. The altitude of the land is 600 ft. above sea level. The temperature ranges are never very severe, although frosts are keenly felt owing to the flat nature of the ground holding the subsoil water. Any snow that falls tends to lie for some considerable time. In summer the maximum temperature rarely exceeds 90°, and this occurs only in hot, dry seasons. At a station four miles away, across the river and at a higher altitude, the rainfall is as follows:

TABLE VI.—*Rainfall at the Gorge, New Zealand. Altitude of 800 feet above sea level.*

—	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.
Jan. ...	4.18	3.50	6.20	3.78	4.79	4.26	6.68	4.81	3.05	2.18
Feb. ...	5.43	2.62	5.13	6.35	4.21	6.97	5.76	5.61	7.03	1.33
March ...	8.62	3.17	4.70	14.77	2.51	8.69	1.76	3.47	5.94	7.67
April ...	5.66	5.41	2.25	5.97	1.26	2.56	2.19	4.33	2.56	3.55
May ...	3.89	2.29	1.94	2.52	3.24	3.44	3.05	2.19	2.39	3.38
June ...	0.76	1.00	2.16	4.70	1.54	3.52	5.13	3.96	1.39	
July ...	4.94	2.98	2.32	0.88	0.83	1.11	1.33	3.66	1.54	
Aug. ...	1.26	2.48	1.88	0.89	2.23	1.95	2.33	2.00	5.84	
Sept. ...	3.13	5.52	2.17	2.89	3.39	1.25	2.35	2.01	5.48	
Oct. ...	0.98	13.12	2.08	3.05	2.12	8.87	5.81	0.66	2.89	
Nov. ...	4.12	3.92	4.35	3.81	4.81	2.27	1.71	4.17	3.67	
Dec. ...	4.30	3.17	9.33	7.52	2.79	5.37	4.81	1.59	1.47	
Totals ...	47.26	49.13	46.62	57.14	38.00	55.11	54.54	38.94	43.15	

On the accompanying map the position of the creek has been shown. The numbers refer to the places where the patients lived.

Many of the patients inhabited the same house for a longer or shorter period, and although none died in this house, and several lived for some years after leaving the house, still they were all working in some part of the district or close to it up to the time of their death.



Cases 1, 2, 3, 4, 5, and 6 all lived in the same house, and although some kept in good health some years after leaving it, they all connected in their minds the district as the cause of their illness. The cottage in which these patients lived was simply a wooden structure built after the usual style of New Zealand houses, and was used as a shepherd's home for the sheep station on which it was situated. Of these six cases, five died either in or close to the district, the sixth dying at a distance. Case 7 worked for many years ploughing and contracting in the district, finally dying of cancer of the stomach at his own farm 7 miles distant.

Cases 8 and 9 (cancer of the bowel) lived at a hamlet a few miles distant, the house being situated on the banks of a branch of the notorious creek, and lying at the foot of the hills with some native bush in the vicinity.

Cases 10, 11, 12, and 13 all lived in the township, which is situated on the main branch of the creek, and lies at the foot of the high hills in the native bush.

Case 14, epithelioma of lip, removed three times, the last operation being twenty years ago, has recently died of cancer of the bladder and rectum. He lived on another branch of the creek, but worked in all parts of the district for at least thirty years.

Case 15 lived in the same house as Case 14 until her marriage.

Case 16 lived just across the smaller river, the house being situated in a hollow with thick native bush growing round it, and having a small stream running past the dwelling.

Case 17 lived for some years in the vicinity, her house being placed at the foot of the hills and surrounded by bush, a small stream passing the house.

Case 18 lived within a few miles; the house was under the hill, and a bush creek ran close to it.

Case 19 lived in the same house as Case 17 for many years.

Cases 20, 21, 22, 23, all lived at a small township three miles from the base of the hills, and formerly surrounded by bush.

Case 24 lived on the same side of the larger river, but some miles distant. His house was placed in a hollow, and the water supply was derived from a creek which rose in a swamp behind the house.

Cases 25 to 30 died in a township ten miles from the foot of the hills. Originally there was a good deal of native bush above the town, and also swampy ground covered with native flax. It was drained by several creeks.

The home of Case 31 was on the banks of one of these creeks. This area has now quite changed, the flax being cut down and the land better drained.

Occupations of the Patients.

All the patients apparently led what one would consider to be essentially healthy lives. The only one who lived an indoor life was Case 30, but even he spent much of his time in the open air.

Cases 1, 2, 3, 5, 6 were shepherds, agricultural labourers, or farmers.

Cases 7 and 15 were agricultural contractors.

Case 10 was a blacksmith.

Cases 11 and 12 were housewives.

Cases 15, 17, 20, 21, 22, 23, 29, 4, 9, and 28 (females) were engaged in ordinary household duties, and spent a good proportion of their time out of doors.

Cases 16, 19, 24 were run-holders.

Case 30 was a draper.

Relationships of the Patients.

In order to eliminate as far as possible any hereditary tendency to the disease, it is only right to consider any relationship existing among the patients.

Case 14 was the father of Case 15.

Case 7 was the husband of Case 15.

Case 6 was the son of Case 8.

Case 28 was the mother-in-law of Case 29.

Case 31 was the aunt of Case 15.

Thus the Cases 6, 8, 15, and 31 were the only ones where a strain of heredity could be detected.

History of Definite Injury.

In many of these cases a definite history of injury or of some long-standing irritation was obtained, these causes being always present in the patients' mind as the cause of their disease.

The following are instances in point:

In Case 7, cancer of the stomach, the onset of the disease was attributed to a horse falling upon him and injuring him in the region of the stomach. This accident, however, occurred some five years before the nature of his disease was diagnosed; the man was going about his usual work, and only occasionally feeling any pain, although he suffered greatly from dyspepsia.

Case 15. Cancer of the breast. This woman was the wife of the last-mentioned case (7). She developed cancer within a year of her husband's death, and at first sight one was inclined to attribute the disease to direct contact, but inquiry proved that she had sustained a severe blow on her breast from a kick by a sheep at least three years before the onset of the disease.

Case 24. Cancer of the bowel affecting the splenic flexure. Ten years before he had injured his left side while moving sheep; the side had always felt weak since.

Case 14. Epithelioma of lip. The usual history of constant smoking, the pipe being held on one side of the mouth. The growth was removed three times with many years between the operations, the lip finally remaining clear for twenty years, when he was attacked with bladder symptoms and a walnut-sized tumour was removed by one of us. Several months later the rectum became involved.

Case 13. Epithelioma (doubtful). The trouble originated from the habit of continuously holding nails between the lips while at work, these acting as a chronic irritant.

Case 30. Cancer of the rectum. This patient suffered for long with piles, which were irritated by bicycling and riding.

Case 8. Cancer of bowel. A history of injury to the side while wrestling was given; the side had felt weak all his life.

Case 16. Cancer of rectum. A long history of piles was given.

Habits of the Patients.

All the cases affected led healthy lives, much of the time being spent in the open air. With regard to their diet, they were all hearty, some of them very large eaters of meat. They all drank tea with all their meals, and frequently between meals. The tea is taken very strong, and often drunk out of tin pannikins in which it has stood for a considerable time. As a general rule, tea was taken with meat at least three times a day.

Case 1. Drank tea to excess; also a good quantity of alcohol; and later drank "pain-killer."
Case 2. Excessive tea-drinker and smoker.
Case 6. Heavy smoker and drinker.
Case 8. Excessive tea-drinker.
Case 10. Excessive tea-drinker; also took alcohol.
Case 11. Much tea and alcohol.
Case 16. Excessive tea-drinker.
Cases 5, 24, 29, 30. Took tea in excess.

Many of the other cases indulged very freely in tea, but the 11 cases quoted above may be said to have been immoderate in their indulgence in tea.

It may be noted that out of 11 female cases only 2 were stated to be excessive tea-drinkers, proving that in this country over-indulgence in tea is commoner in males than in females. This bears out the experience of many practitioners who live in country districts.

No actual malaria is endemic in this particular district, but many of these patients suffered from subacute and chronic rheumatism, especially those who worked on the ground before it was drained. It is difficult to obtain exact statistics of the prevalence of cancer in New Zealand with reference to the respective districts in which the disease first was diagnosed. The four large centres, Dunedin, Christchurch, Wellington, and Auckland, naturally show the greatest number of cases. To these centres patients come for treatment from the country districts. On the West Coast of New Zealand, where the rainfall is very large, we have been only able to gather statistics from one or two practitioners.

Dr. Brittin, who practised at Ross, on the west coast, kindly searched all his notebooks and death certificates for cancer cases. He writes to us that during three years' practice on the coast he had 35 deaths: 20 of these were under 9 years of age. Of the remaining 15 which occurred between the ages of 10 and 78 years, 5 were due to cancer —4 males, aged 53, 53, 59, and 63 respectively, and 1 female, aged 62; 4 of these were cancer of liver or stomach, and 1 a cancer of the orbit. He says: "In three years' practice on the coast I had 5 deaths from cancer out of 15 adult deaths. In 10 years' practice in Papanui (east coast) I had 1 death from cancer out of 70 from other causes. On the west coast in the mining townships and camps the diet was 'frying-pan meat and billy tea.' The tea leaves were emptied out of the 'billy' once a week, and the billies always showed signs of corrosion. The water contained iron and tannin from the decomposing vegetable matter in all the bush streams. The whole district was bush, and my patients lived in small huts. Chronic rheumatism was universal."

Alfred Haviland, in his article on medical geography, points out the highest mortality of cancer is found around the lower courses of fully-formed rivers that seasonally flood their riparial districts; the lowest cancer mortality is found on the most elevated tracts of country, and correspond to the area of older rocks, the highest mortality groups being coincident with the more recent geological formations, especially the clays and the still more recent alluvial soils. This theory is certainly borne out by the collection of cases recorded by Dr. Brittin and Dr. Hislop.

Cancer Houses.

D'Arcy Power gives a number of instances where several persons living in the same house have developed cancer. Thus, in a brick house on land formerly pasture land, three cases following each other died of cancer. Several other instances are recorded. In some, however, the patients were related.

Cases 1 to 6 all lived at some time in the same house, and under the same conditions, although none of them happened to die in this house.

The neighbourhood of the native bush and bush streams seem to have some distinct connexion in the origin of the disease. Malaria may not be an antagonist to cancer, but it is significant that where malaria is common cancer appears to be rare. It may not be improbable that there is some malarial poison antagonistic to the growth of cancer cells.

So many of the cases were rheumatic, and rheumatism is so prevalent in subacute or chronic forms in bush districts, that we can hardly ascribe the coincidence of rheumatism and cancer to an accident. It is not impossible to imagine that the circulation of the blood in rheumatic cases may act as a direct irritant to the tissues.

So many cases of cancer appear to follow a definite injury that one is obliged to believe in a direct connexion between traumatism and cancerous invasion—epithelioma of the lip, so rare in non-smoking females; cancer following gall stones; the Kaigu burn disease, so frequently seen in Kashmir; cancer of the scrotum in sweeps, now rarely seen since the modern chimney has altered the conditions of chimney cleaning—all point to irritation as localizing agent for cancerous invasion.

Out of 201 cases of cancer of the penis, Captain Whitlock, R.A.M.C., observed that they all occurred in Hindus who were uncircumcised, and none in Mohammedans who were circumcised. Sarcomata affecting the lower extremity is more common in Hindus, who go barefooted, than in Mohammedans, who wear shoes.

Against the irritation theory, it has been said that cancer of the penis occurs not in stallions, as one might expect from the irritation of coition, but in geldings; this, we believe, is due to the irritation of the dirt within the sheath, for a well-known horse dealer has informed us that by daily cleansing the inside of the sheath he can improve the health of a gelding immensely, and add to its market value considerably.

The cases of cancer admitted to the hospitals, being drawn from all over the district, do not give any information of interest, but in the last fifteen years we have been struck by the fact that carcinoma is appearing at an earlier age than formerly. It is very little comfort to console ourselves that it is due to a more careful or more accurate diagnosis that cases are detected earlier. The fact is, they do seek advice at an earlier age.

RODENT ULCER TREATED BY POTASSIUM BICHROMATE.

By WM. GEMMILL, M.A., M.B., Ch.B.Edin.,
Senior Assistant Physician, Ayr District Asylum.

The case under consideration was a woman of 82 years of age. When she came under my care at Ayr District Asylum she had a history of having had a "sore of the nose" for two years. On examination the condition was found to be typical of rodent ulcer. Vertically the ulcer extended from the nasion above to the inferior border of the nasal bones below. Laterally it approached to within ¼ in. of the inner canthus of the left eye, and to within ¾ in. of the inner canthus of the right eye, and covered most of the bony skeleton of the nose. It presented a well-defined "rolled" irregular border, with an ulcerated centre showing no granulations. The patient felt no pain, but complained of great itching, and in consequence she was continually picking at the ulcer.

On account of the extent and position of the ulcer, it was thought impracticable to employ surgical means for its removal. The use of potassium bichromate was suggested by the paper of Dr. James Fenwick.[1] A 10 per cent. aqueous solution of the bichromate was painted on the surface of the ulcer night and morning for a few days,

until a marked inflammatory reaction in the surrounding tissues occurred, the ulcer being protected between times by a piece of lint retained in position by strips of sticking-plaster. The bichromate was then stopped, and a dressing of boracic ointment applied until the surrounding inflammation was allayed. The ulcer then appeared to be in a healthier condition, the floor having been partly destroyed and granulations becoming evident.

The process was repeated twice, bichromate being painted on the ulcer night and morning as before, with a similar result, and being followed by the application of boracic ointment. The effect of the potassium bichromate was the production of a sloughing of the unhealthy tissue over the whole floor, which extended also under the rolled edge of the ulcer. Healthy granulation was promoted, and, after the completion of the third series of applications of the bichromate, the epithelium spread rapidly over the ulcer, which healed completely, leaving a somewhat irregularly-pitted scar.

From the beginning of the treatment till the ulcer was apparently cured occupied a period of three months. Two weeks later, however, a small part of the margin of the cicatrix began to break down. Two further repetitions of the process were sufficient to cure this, and so far no further recurrence of the condition has taken place.

REFERENCE.

[1] BRITISH MEDICAL JOURNAL, March 6th, 1909.

TWO CASES OF ASCITES DUE TO LIVER CIRRHOSIS TREATED BY OPERATION.

BY G. GREY TURNER, F.R.C.S.ENG.,

HONORARY ASSISTANT SURGEON, ROYAL VICTORIA INFIRMARY, NEWCASTLE-UPON-TYNE.

THE whole subject of the surgical treatment of ascites secondary to cirrhosis of the liver was so fully dealt with by Mr. Sinclair White in the paper with which he opened the discussion at the British Medical Association meeting at Toronto in 1906,[1] that it requires me to say that the object of this communication is merely to add two unpublished cases to the literature of the subject.

The operation of omentopexy as devised by Drummond and Morison is a valuable addition to surgery, and if it does not as yet occupy the place it deserves it is because sufficient care has not been taken in the selection of cases. It is only proper that such a means for the cure of ascites should be tried in cases widely dissimilar, for only in this way can its usefulness be extended; but, as I pointed out in a short paper read in Toronto,[2] it is not fair that the cases should be lumped together for statistical purposes. When the operation is reserved for uncomplicated cases of ascites due to alcoholic cirrhosis that have withstood one or two tappings, the results are very much better than is generally supposed, and I am glad to be able to contrast a case in which the indications were such as to lead one to expect a successful result with one in which the operation was undertaken rather as a forlorn hope than with the expectation of recovery.

CASE I.—*Cure of Ascites due to Alcoholic Cirrhosis: Double Radical Cure of Hernia Subsequently: Patient Alive and Well Two Years and Nine Months Later.*

J. T., aged 46, a gas works labourer, was admitted to the Newcastle-upon-Tyne Royal Infirmary under the care of Dr. George Murray on September 22nd, 1906, complaining of swelling of the abdomen and ankles. The patient came of a healthy family, and had usually enjoyed excellent health in spite of the fact that he had always been a heavy beer drinker. His present illness began twelve weeks previously with swelling of the abdomen, which became so distressing that he had to be tapped four times in the eight weeks preceding admission. He suffered very much from shortness of breath, which was relieved after the tapping. The secretion of urine was very scanty, but there was no trouble with micturition. Recently he had lost flesh considerably. When 20 years of age the patient contracted gonorrhoea, but there were never any symptoms of syphilis. Twelve years previously he was operated upon for double hydrocele. Four years ago a right inguinal hernia presented itself as the result of heavy lifting, and seven months ago it gave him so much trouble that he began to wear a double truss.

On his admission the patient was found to be a big man, weighing 13 st., but looking anaemic and ill, and with a dirty tongue, though he had a good appetite. The temperature was 97.8°, and the cardio-vascular system normal, with a pulse of 80. There were some crepitations at both bases; urine was very scanty and of specific gravity 1030, but there was no albumen or sugar. The abdomen was full of fluid, which distended the sacs of a double inguinal hernia. While in the medical wards the patient was tapped four times—namely:

September 23rd	...	...	447 oz.
October 6th	...	...	398 oz.
October 20th	...	...	432 oz.
November 3rd	...	...	394 oz.

As the condition was not improving, Dr. Murray asked me to see the case with a view to surgical interference, and I looked upon it as a very favourable one for omentopexy.

Operation.

The patient was prepared in the ordinary way, and on November 6th, 1906, I carried out the following operation:

The abdomen was opened by a median incision, 4 in. long, above the umbilicus. The subperitoneal veins were very large and numerous. An enormous quantity of fluid escaped as soon as the peritoneum was opened, and a separate small incision was at once made above the pubes for the introduction of a Keith's tube through which the fluid escaped during the remainder of the operation. The liver was found to be very small, markedly hobnail, and much fissured. The spleen was twice its normal size. The omentum was shrivelled up, so that it lay like a fringe along the transverse colon. There were numerous vascular adhesions about the liver, but none elsewhere. After emptying the abdomen of fluid with sponges the surface of the spleen and the corresponding parietal peritoneum were thoroughly scrubbed with a sponge, but no attempt was made to treat the liver in this way, for fear of disturbing the existing adhesions. The omentum was then fixed to the parietes by silkworm sutures tied over gauze dozzles. The incision was closed in layers with catgut, the Keith's tube being left in the pelvis and the abdomen carefully strapped from above downwards. Special nurses were employed to keep the tube clear of fluid, and this necessitated its being drawn every fifteen to thirty minutes for the first few days. During the seventeen days the Keith's tube was allowed to remain the daily amounts of fluid averaged 12 oz., and during the three days immediately preceding its removal the amounts were 31 oz., 29 oz., and 5 drachms respectively. At this time the glass tube was replaced by a rubber one, and as the fluid gradually lessened this was removed a week later.

After-History.

A month after the operation the man was able to leave the hospital much improved in general condition, but still with some free fluid in the abdomen. To help absorption he was given a little potassium iodide and mercury, and this he took continuously for the next five months. A fortnight after leaving the hospital the abdomen was tapped for the last time, 6 pints and 7 oz. being removed. In the middle of January, 1907, the patient was very well. He slept and ate well; the bowels were regular; there was very little fluid in the abdomen and much less swelling of the feet. A month later the man reported himself as still very well, his principal trouble being due to the distension of his hernial sacs with what fluid remained in the belly. The use of a suspender gave him some relief, but it was eventually decided to rid him of this inconvenience by operation.

Operation on Herniae.

On May 6th, 1907, both herniae were operated upon by the method of Bassini. The superficial veins over either hernial region were unusually prominent, but there was nothing else worthy of note about the operation. For two or three days after this interference the man was decidedly lethargic; there was slight jaundice and an erythematous eruption, but, to my great relief, these symptoms quietly disappeared, convalescence thereafter being uninterupted.

After-History.

By the middle of June he was much better than he had been before the hernia operation, and in August he went back to work. In July, 1908, the patient reported himself in excellent health; he had worked continuously since starting, and had no complaint to make beyond the inconvenience caused by a cyst of the epididymis on the right side, which he wished had been cured at the same time as the hernia. When the man next reported himself, in August, 1909, he looked the picture of health and expressed himself as in better health than ever before, weighing 14 st. He was working regularly, earning £1 a week as a labourer in the gas-yard, and eating and sleeping well. Since the operation he has not taken alcohol in any form.

This, then, was a case which fulfilled the indications which an increasing experience has shown may justify us in predicting a successful outcome for the operation.

(*a*) It was clearly a case of alcoholic cirrhosis.

(*b*) There were no cardiac, renal, or pulmonary complications.

(*c*) The patient had withstood several tappings.

There were one or two points about the operation worthy of comment. The subcutaneous veins and the subperitoneal plexus were tremendously enlarged, and there were many vascular adhesions about the liver, but not between the omentum and the parietes. The deductions to be drawn were not quite clear. Did it mean that

Nature had put forth her best and required but a little help from the surgeon? on which hypothesis one would augur a rapid recovery with the additional aid the operation was able to give. Or did it mean that if so good a collateral circulation was not enough, the comparatively small addition given by the operation would not be likely to help? As it turned out, recovery was slow, and it evidently took Nature all her time to do what was just necessary to set about cure.

The omentum was all shrivelled up and closely tucked to the transverse colon, so that there was very little of it to attach to the parietes, but in another similar case it would be very easy to stitch the transverse colon, carrying with it the remains of the omentum, to the belly wall.

Drainage was employed and the abdomen strapped, as originally suggested by Mr. Morison. There is a tendency to dispense with drainage and to be content to tap later, simply, it appears, because of the inconvenience of the tube and the risk of septic peritonitis. I have never seen a case die from sepsis, and, to my mind, the drainage is important, for some cases have been cured by this measure alone, fluid being allowed to escape either externally or into the tissues.[3] I think the case under review illustrates the importance of drainage, for the collateral circulation already established would seem to have been enough, were it a mere mechanical problem; and this is further suggested by the unusual time the fluid ran, by the fact that the man required tapping after the operation, and that fluid reaccumulated to a slight degree. It may be that only some cases require both aids to cure, but I submit that it requires further experience to show us in which cases drainage may be wisely dispensed with, or, possibly, in which it alone may succeed.[4]

As the general condition improved the patient began to be more and more troubled by his hernia, and I was confronted with the responsibility of advising him in regard to it. Those who recall Mr. Morison's earlier papers[5] will remember that his first successful case died jaundiced and comatose after an operation for the radical cure of a ventral hernia performed two years after the omentopexy. The special danger attached to any operation after omentopexy appears to be the onset of toxaemia, which may overtake patients suffering from cirrhosis quite apart from any operative interference; but in interfering with an inguinal hernia there is the additional danger of upsetting the venous circulation by division of the superficial epigastric and other veins, which often take so large a part in establishing the collateral circulation.[6] My patient, however, was very anxious to be rid of his additional burden, as it interfered with his wage-earning capacity, and I advised him to run the risk. The lethargy and slight jaundice which followed the operation made me very anxious, but the symptoms soon passed off, and recovery was then as smooth as in any ordinary case. About two months later the wisdom of the step I had taken was confirmed by the death of another of Mr. Morison's patients from strangulated hernia. This was M. J., No. 9 in my previous list.[7] The patient, a butcher, aged 60, was operated on for ascites in July, 1905. In July, 1906, he was in excellent health, but had developed a right inguinal hernia, for which he wore a truss. A few months later he reported himself as having gained 5 st., making him 14 st. in weight. In July, 1907, his hernia became strangulated, but he was not seen by a surgeon until four days afterwards, when the operation, so long delayed, was followed in a few hours by death.

My patient has become a total abstainer, and it is partly to this that I attribute his very excellent health, for, so far as I know, there is no evidence that the operation can do anything to compensate for the loss of liver substance, and the patient must husband what remains lest the disease progress in spite of the new collateral circulation.

One of my patients was an old woman of 66, an inveterate whisky drinker, who would not give up her alcoholic habits, and had always a bottle of whisky in bed beside her. In spite of this she was comfortable after the operation, and, on her death three months later, I found only a small amount of free fluid, whereas, in the six months preceding the operation, she had been relieved of 6 gallons of fluid on three separate occasions. The omentum and small intestine were very well adherent to the parietes.

Sinclair White[8] mentions two cases in which he had successfully operated for the cure of ascites, but in which the fluid and the train of symptoms associated with it returned after a few months of unchecked debauch.

The next case illustrates some very important points in connexion with this operation.

Case II.—*Syphilitic Cirrhosis: Omentopexy: Death.*

J. J., aged 44, was admitted to the Newcastle Royal Infirmary under Dr. W. E. Hume, on August 6th, 1908, complaining of abdominal pain and swelling of about two weeks' duration. There was a history of syphilis ten years previously, and he had also suffered from malaria and enteric, and was often troubled with diarrhoea. He admitted having been a regular beer drinker, now and then to excess. Just before admission the patient was tapped, but the fluid rapidly reaccumulated. On admission he looked fairly well, and weighed 9 st. 12 lb.; the heart, lungs, and kidneys were normal, though the excretion of urine was very much diminished. Over the front of the abdominal wall there were many enlarged veins, and especially so around the umbilicus. The abdomen contained a large quantity of free fluid, and neither the liver or spleen could be felt. A diagnosis of syphilitic cirrhosis was made, and the patient given a thorough course of mercury and iodide. The abdomen was tapped four times, on each occasion about 300 oz. being removed. In spite of treatment the patient went steadily downhill, losing weight and strength, and only ten days elapsed between the two last tappings, while he became very lethargic, and in this state was transferred to the surgical wards.

Operation.

I operated on October 23rd, 1908, carrying out precisely the same operation as in the first case. There was a large amount of free fluid; the omentum was not rolled up but its veins were very large; the liver was small, and the spleen not much enlarged. With the exception of a few adhesions over the posterior surface of the liver there were no signs of an attempt to establish a collateral circulation, and one got the impression that everything was left to be done. The operation was completed as in the first case, and the patient stood it very well, though he never showed any signs of improvement afterwards. He became more lethargic than before, refused his food, and paid no attention to his friends. There was never more than 20 oz. of fluid from the Keith's tube, and this very much diminished as the patient got weaker. There was no pyrexia, nor did jaundice develop. Death occurred on the fifth day. At the necropsy the peritoneum was found perfectly clean; there were no new adhesions whatever; the liver was very small, and contained numbers of large scars as of old gummata, and the spleen was exceptionally fibrous.

In this case the diagnosis was interesting. When I saw the man in the medical wards, I recognized him as one of my old out-patients who had attended on account of a syphiloma of the testicle and gummatous ulceration on the outer side of the thigh, and it was acting on this knowledge that the patient was given a thorough course of iodide and mercury, but without any benefit whatever.

My experience has led me to beware of the cases in which the cirrrhosis is probably due to syphilis, for none have done well, and it was this which led me to hesitate before undertaking the operation and to give a bad prognosis.

In addition to the syphilitic origin of the cirrhosis, this patient did not improve even temporarily after tapping, and when he came to the surgical wards he was in much worse condition than when I first saw him, for he had lost weight and strength, and was obviously going downhill. To interfere at this stage certainly gave the man the last chance, but as he survived nearly a week after the operation, it was probably but an incident in his fatal illness.

The question is often raised as to the stage at which this operation should be performed, and I think, in the absence of other visceral disease, that if the fluid rapidly reaccumulates the operation should not be delayed, for I was much impressed by the case of a gentleman of 46, who was relieved of an average of about 22 pints of fluid nine times in eight months, but who became cholaemic and died suddenly when everything seemed to augur that tapping alone would bring about cure.

References.

[1] Sinclair White: The Surgical Treatment of Ascites Secondary to Vascular Cirrhosis of the Liver, British Medical Journal, November 10th, 1906. [2] G. Grey Turner: The Cure of Ascites by Operation, British Medical Journal, November 10th, 1906. [3] Sir Hector Cameron in the Discussion on the Surgical Treatment of Vascular Cirrhosis of the Liver, British Medical Journal, November 10th, 1906, p. 1298 (Sinclair White). [4] W. Essex Wynter: The Treatment of Ascites by Continuous Drainage into the Tissues, *Archives of Middlesex Hospital*, Clinical Series, No. 11, p. 15. [5] Cure of Ascites due to Liver Cirrhosis by Operation, *Lancet*, May 27th, 1899. [6] Rutherford Morison: A Case of Ascites due to Liver Cirrhosis treated by Operation, *Annals of Surgery*, September, 1903; U. N. Brahmachari: Compensatory Collateral Circulation with Caput Medusae in Cirrhosis of the Liver without Ascites, *Lancet*, December 14th, 1907. [7] Same as (2). [8] Same as (1).

TWO CASES OF PRIMARY CARCINOMA OF THE APPENDIX.

BY DAVID M. GREIG, C.M., F.R.C.S.EDIN,

SURGEON, DUNDEE ROYAL INFIRMARY; LECTURER ON CLINICAL SURGERY AND SURGICAL DISEASES OF CHILDREN, ST. ANDREWS UNIVERSITY; SURGEON, ROYAL VICTORIA HOSPITAL, ETC.

PRIMARY carcinoma of the appendix is necessarily an uncommon occurrence in any individual surgical practice, hence no justification is required for the publication of isolated cases. Such cases have been collected from time to time by various writers, but as yet have not been numerous enough to justify conclusions as regards symptoms, prognosis, and other valuable clinical data. In both the following cases the patients were operated on in December, 1905, and both are at the present time in perfect health, and show no sign of recurrence.

CASE I.

A labourer aged 35 was referred to me by Dr. Lawrence. He was the youngest of twelve, the others being in good health. His father died of cancer of the stomach, but his mother was alive and well. Though married he had no family. He had a comfortable home, and was temperate and a moderate smoker. Twenty years previously he seems to have passed through a mild attack of complete syphilis, and four years later he had an attack of bronchitis. These constituted his only previous illnesses.

History of Illness.

Two months previous to my seeing him he supposed he had strained himself at work, for he was seized somewhat suddenly with a pain in the lower part of the abdomen which shot down into the right testicle. He continued at his employment, however, for about a month, the pain gradually getting worse. The taking of food aggravated it; the bowels were very constipated, and he had pain during defaecation. He then consulted Dr. Lawrence, who recognized it as an atypical case of appendicitis, and under whose directions he restricted his diet to fluids, with the use of enemata every other day to relieve the constipation. Dr. Lawrence was struck with the fact that the pain continued more severe and more constant than the mildness of the other symptoms would have led one to expect, and it was more irrespective of the ingestion of food. His temperature was lower than in typical appendicitis. During three weeks of treatment he improved somewhat, approaching his usual condition of health and becoming almost free from pain. A slight relaxation of diet was allowed, and on the following day the pain returned as violent as ever. There was not with this, however, the usual general symptoms of inflammatory disturbance.

Condition on Admission.

On admission to the Dundee Royal Infirmary he looked a strong man, and appeared to be healthy with the exception of slight pulmonary emphysema. He had slight pain at the end of micturition. Locally a little fullness was visible in the right iliac region, with some discoloration and desquamation caused by hot applications. There was some muscular resistance to palpation and tenderness over the appendix area. An elongated hard swelling was felt a little above and running parallel to Poupart's ligament.

Operation.

On December 13th, 1905, under chloroform anaesthesia, the caecal region was exposed by the usual incision. The appendix was found to be imbedded in an inflammatory mass attached along the line of Poupart's ligament, and, dipping down into the pelvis, was attached to the bladder. To facilitate manipulation it was necessary to make a median incision to supplement the original one, and the mass was dissected out, the stem of the appendix being treated in the usual way. The operation, which was an unusually difficult one on account of the density of the adhesions, occupied an hour and fifty minutes, and the raw surface from which the inflammatory mass had been removed was such that I thought it advisable to introduce on to it a drainage tube from either wound.

After-History.

The wounds were dressed on the following day and daily thereafter until the removal of the tubes, the suprapubic one being removed on the fifth and the iliac on the eighth day after the operation. The wounds healed without any further difficulty, and the patient went home on January 20th. After his discharge from hospital I saw him occasionally until he went to America in the spring of 1907. While there he retained good health, becoming stouter and heavier, until he weighed 12 st. 10 lb., a weight he had never previously attained. His appetite was good, and he had no trouble with the bowels. He occasionally had pain about the region of the right kidney, but nothing abnormal could be made out in connexion with that organ. He returned from America in June, 1909, and was then, as he still is, in excellent health and condition. The cicatrices were strong and showed no yielding, though he wore no belt. An occasional pain about the right loin is complained of, but examination is entirely negative.

Description of Parts Removed.

Professor Sutherland, who examined the growth for me, reported that the lesion was quite definitely cancerous, with marked inflammatory new formation in the parts around. It had originated in the epithelium of the tubules, assumed in places a glandular disposition, but, losing this again, comported itself more after the manner of a scirrhus. There was no doubt whatever that it was not an ordinary cylinder-celled epithelial carcinoma of the intestine.

CASE II.

For permission to publish the second case I am indebted to Dr. R. C. Buist.

The patient was a married woman, aged 36, who had been sent into his ward on account of uterine fibroids, for which he did a hysterectomy. During the inspection of the parts after the completion of the hysterectomy it was noticed that the free end of the appendix was the seat of what appeared to be a plum-sized cyst without any adhesions or any inflammatory adjuncts whatever. The appendix was removed in the usual way. Professor Sutherland examined the tumour removed with the appendix and found that it was cancerous, the microscopic examination showing a cylinder-celled carcinoma. The patient made an uninterrupted recovery, and is known to be well at the time of publication.

These two cases fall into very different categories, and for clinical purposes hardly deserve to be classed together. The former proves the danger, the latter merely demonstrates the possibility of the existence, of primary carcinoma of the appendix. In the former the appendicitis, with its pain and its surrounding inflammation, was the dominant symptom; in the latter no symptoms had arisen. Both the patients were about the same age, rather on the young side for malignant disease of the bowels. The variety of carcinoma found in primary affection of the appendix appears to be most commonly of the cylinder-celled variety, and such was present in the latter case. It is much rarer, indeed, to find the appendix the seat of an alveolar carcinoma, and this the pathological examination showed the tumour to be in the former case.

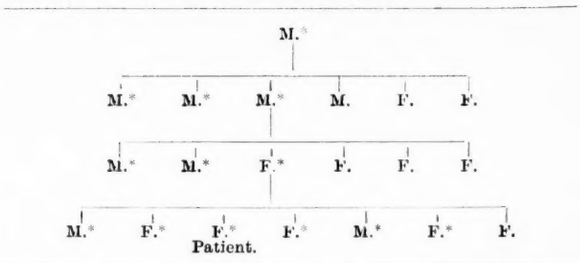
Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

HEREDITARY TRANSMISSION OF SQUINT.

THE following particulars of a case may prove of interest: On Thursday, September 23rd, a girl, aged 11, attended Mr. Sydney Stephenson's out-patient department at the Queen's Hospital for Children with a convergent squint of the right eye which measured 35 degrees on the perimeter, the lateral movements of the eye being unimpaired. Right vision $\frac{6}{18}$ partially, left vision $\frac{6}{12}$. It was noticed that the mother also had a convergent squint of the right eye measuring 25 degrees on the perimeter, and there was defective outward movement of the right eye.

On inquiring into the case it was found that on the mother's side the following members of the family had a



M. Male. F. Female. * Affected.

convergent squint: Six out of her seven children—that is, all her children except the youngest, aged 2 months—the mother and her two brothers, her father and two of his brothers, and her grandfather.

The chart, which was kindly got out for me by the sister in charge of the out-patients, gives the tree of this interesting case of hereditary transmission of squint.

ERNEST E. B. LANDON, M.R.C.S., L.R.C.P.

Acton Vale, W.

Reports of Societies.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

Friday, October 1st, 1909.

Professor R. Muir, President, in the Chair.

Presidential Address.

Professor R. Muir, M.D., in a presidential address, pointed out that confusion and inaccuracy prevailed both in pathological and clinical work owing to the lack of a generally accepted definition of the term "inflammation." The chief reason for the difficulty in obtaining agreement amongst authorities was the fact that inflammation was a collection of processes all differing in nature. After analysing these and showing that they were (*a*) retrogressive processes, necrosis degenerations, the direct result of damage, (*b*) reactive or progressive processes, defensive and reparative, including increased functional activity—for example, phagocytosis—and increased formative activity—for example, proliferation of cells—he showed that the reactive processes might be, in a sense, regarded as the most important phenomenon; but that, if so, it was one which had no relation to any of the cardinal symptoms of inflammation. When subacute and chronic inflammation were considered, the difficulty increased. The presence of certain parasites produced, in addition to other effects, proliferation of connective tissue cells and the formation of new blood vessels, or, in other words, led to the formation of granulation tissue, similar to that seen in the healing of wounds. Was this process to be considered the same in nature in the two cases or of two kinds? It was unjustifiable to extend the term "inflammatory" to the healing process, which essentially depended upon breach of continuity of the tissues—that is, to a variety of regeneration. "Inflammatory proliferation" might be the result of damage—that is, reparative in kind, and not the effect of direct stimulation—but this was not proved. It was better to speak of it simply as being the result of irritation; whether this acted directly or indirectly must be left an open question. In any case the use of the term "inflammatory" served no useful purpose. The same held with regard to the fibroses. Some were due to continual mild irritation, some were simple replacements, and some were of functional significance; but whether they were inflammatory or not depended entirely on the definition of the term. The necessity for analysis was equally great in connexion with the "treatment of inflammation." Here, again, inflammation was not to be regarded as a process, nor treatment to be directed towards it as a whole. Each therapeutic measure should be applied to some part of the complex, and so applied according as to whether the process in question was to be checked or encouraged. The general conclusion reached was that it was impossible to define inflammation, and at the same time maintain its relations to the recognized cardinal signs. The term should only be used as a convenient though somewhat indefinite clinical phrase, and its use in matters of discussion should be avoided.

NORTH OF ENGLAND OBSTETRICAL AND GYNAECOLOGICAL SOCIETY.

Liverpool, Friday, October 15th, 1909.

Dr. J. W. Martin, President, in the chair.

Miss Ivens (Liverpool) read notes of five cases of *Tuberculous salpingo-ovaritis*. In four the disease was apparently primary in the tubes; in the fifth there was an associated bone lesion. The ages varied from 20 to 36. Dysmenorrhoea was the only symptom common to all. Dysuria occurred in four cases and menorrhagia in three. In no case was the uterus removed, though both tubes were extirpated in each case. A portion of ovary was left in all but one case. In all there had been an immediate and maintained good result, with gain in weight and freedom from pain. In one tuberculous peritonitis developed, but subsided after tuberculin treatment. Dr. Arnold Lea (Manchester) read a short paper on *Gastric ulcer as a cause of pelvic peritonitis*, with notes of three cases. Chronic adhesive pelvic peritonitis, with more or less disorganization of the uterine appendages, was found on abdominal section in each case. No evidence of the usual causes of pelvic peritonitis could be obtained. On the other hand, there was in each instance a history of severe chronic gastric dyspepsia, with an illness suggestive of a leaking gastric ulcer, from which the patient had recovered without an operation. Dr. Leith Murray (Liverpool) read a paper on the anti-autolytic action of blood serum and its relation to *Hyaline degeneration of uterine fibroids*. Small pieces of a fibroid incubated in serum soon developed, he said, distinct hyaline change limited to the connective tissue. Muscle fibres took a purely passive part in the process. The hyaline appearance produced resembled hyaline degeneration occurring naturally, both on general microscopical examination and in staining peculiarities. The clear fluid cavities in oedematous fibroids did not, he considered, result from thinning out of surrounding hyaline material, as Kelly and Cullen had asserted, but the fluid in them was directly responsible for that change, and could be produced *in vitro*. Among the exhibits were the following:—Dr. A. J. Wallace (Liverpool): A uterus and vagina removed for *Carcinoma of the cervix*, extending superficially over the entire anterior vaginal wall. There was no infiltration of the parametric tissues. The vagina was first separated from below, and its lower end invaginated and closed by a double layer of sutures. The operation was completed by the abdomen, an ordinary pelvic dissection being performed. The pelvic glands on the left were enlarged, and were freely cleared out. Those on the right side were much enlarged, and too intimately adherent to the iliac vessels to justify removal. Dr. J. E. Gemmell (Liverpool): A good example of a rare fetal monster—*Symelus*.

ROYAL SOCIETY OF MEDICINE.

Section of Surgery.

Tuesday, October 12th, 1909.

Mr. R. J. Godlee, President, in the Chair.

Inflammatory Diseases of the Lungs and Pleura.

The President read a paper on the prognosis in some inflammatory diseases of the lungs and pleura commonly treated surgically; it was a subject, he said, in which he had always taken great interest, and the materials for his remarks were taken from his private notebooks. Prognosis in the conditions under consideration was generally hopeful, and encouraging for the continuance of existing methods of treatment. Serous effusion with acute pleurisy, left in itself "no stain upon the character." This dictum had been endorsed by Dr. Theodore Williams, who said that such cases were accepted at ordinary rates for life insurance if physical signs of disease were absent, and if sufficient time had elapsed. All insidious cases of chronic serous effusion were not tuberculous, and all tuberculous cases were not insidious in onset. Cases of carcinoma of the lung, aneurysm, and subdiaphragmatic mischief might be mistaken for simple pleurisy, and thus both diagnosis and prognosis might be very difficult. He advocated repeated tapping in serous effusion, and detailed a case in which, after sixteen tappings and seven months' treatment, recovery ensued, and no tubercle bacilli were discovered. As to acute empyema of children, he had little new to say, but laid stress on the importance of well-established principles of treatment such as free opening, good drainage in the recumbent and sitting-up positions. The prognosis varied; some got well in ten days, others in a month, others not for six weeks. Pneumococcal cases did best. In another class—those in which a fistula existed—whilst the prognosis as to life was good, the chances of closing the fistula were most problematical; he had made several unsuccessful attempts to do so. He mentioned some most interesting cases of bronchiectasis and recurrent empyemata, and referred to the dangers of very extensive thoracoplasty and operations for removal of portions of the lung. Bilateral bronchiectasis was not amenable to surgery, but cases due to foreign bodies inhaled could be so treated, and might live many years in good health. Bronchiectasis was likely to be followed by cerebral abscess, which was the end of all prognosis, but the author was unable to give any reliable guide as to the possible supervention of this complication.

PATHOLOGICAL SECTION.

Tuesday, October 19th, 1909.

Dr. F. W. MOTT, M.D., F.R.S., President, in the Chair.

Presidential Address.

THE presidential address upon the present position of the neurone doctrine in relation to neuro-pathology will be published in a subsequent issue.

Rhabdomyoma of the Bladder.

Mr. S. G. SHATTOCK exhibited the bladder of a male child, aged 2 years, from the mucous membrane of which many polypi projected. Histologically they consisted almost solely of striated muscle fibre in all the normal stages of development from large multinucleated sarcoblasts. In discussing this unusual site of striped muscle, the author adopted the view that heteroplasia in the case of tumours meant heterotopia, or the displacement of embryonic elements from a normal to an abnormal position. Certain of the striated fibres of the external sphincter vesicae (Henle) lay deeply in the substance of the anterior or upper portion of the prostate, Henle's description on this point having been recently fully confirmed by Mr. C. S. Wallace. It was from vagrant sarcoblasts that the striated fibres in the mucous and submucous coats probably developed. In favour of this view was the circumstance that the tumours were confined to the neck of the bladder, and that they were almost certainly congenital.

THERAPEUTICAL AND PHARMACOLOGICAL SECTION.

Tuesday, October 5th, 1909.

Professor A. R. CUSHNY, President, in the Chair.

The Teaching of Therapeutics.

SIR CLIFFORD ALLBUTT, in opening a discussion on the teaching of therapeutics in the hospital ward, said that medical men must be pioneers; they could not afford always to wait for the pharmacologists, but there must be a mutual watchfulness of each other. Much that we knew to-day to be good came from empirical knowledge; such knowledge was still being acquired, but the empiricism must be of the best kind, the knowledge of experience. He selected three examples of methods of treatment which had stood the test of modern research, but which came originally from folk medicine—namely, digitalis; vaccination, which to-day had wonderfully expanded in other directions; and poultices, which, after suffering a period of abuse, were, through the work of Bier, seen to be fundamentally reasonable. The student must be assured that, apart from pharmacological proof, there was a large tradition of empirical knowledge of great provisional service. He should be told that such and such were the means found useful in clinical experience, whether they could be scientifically explained or not. They were to go to the bedside as artists to do what they could for the patient with such lights as they had. Finally, the student must be told he had to deal with living realities. He must be (1) assured he must be no sceptic, or he would endanger his own resourcefulness; (2) given a clear idea of the *vis medicatrix Naturae*; (3) warned against the danger of the overuse of drugs, and shown how closely therapeutics depended upon prognosis. Professor OSLER, F.R.S., gave an account of the methods adopted at the Johns Hopkins University, laying stress on the practical advantage thereof. Dr. HARRINGTON SAINSBURY thought there should be more careful teaching of the history of therapeutics. Dr. CALVERT said that there was a lamentable ignorance regarding incompatibility of drugs and of simple and practical therapeutic methods, which should all be systematically taught in the wards. Dr. ROBERT HUTCHISON relied more on teaching the student to be a sound diagnostician than a pharmacologist, and suggested that the time was ripe for some uniform agreement on the main lines of treatment to be adopted in certain well-known diseases, such as gastric ulcer. Professor DIXON insisted on the advantage to the student of a sound pharmacological knowledge, and pointed out the rational value of administering alkaloids when strength and action were accurately known. Dr. BEDDARD thought it was impossible to really teach therapeutics in the wards. Sir DYCE DUCKWORTH emphasized the necessity of imparting practical instruction to the student, such as the giving of enemata, hypodermic injections. He deplored the multitude of new so-called remedies. Dr. HACKNEY said the student should be taught how to manage a practice, keep books, and be given a general idea of ordinary routine work. The PRESIDENT closed the discussion with a few remarks.

HUNTERIAN SOCIETY.

Wednesday, October 13th, 1909.

Mr. T. H. OPENSHAW, C.M.G., President, in the Chair.

The Hunterian Lecture.

DR. SIDNEY MARTIN, in delivering the first Hunterian Lecture of the present session, dealt with certain infective processes in the intestine, their effects and treatment. He classified bacteria having their habitat in the intestine into three groups: *Endogenous—Bacillus coli communis* and *Streptococcus faecalis; exogenous*, such as enteric; and *putrefactive*. These last when they developed led to serious pathological results. The rôle of the *B. coli* was to counteract putrefactive bacteria; the *B. coli* and *B. acidi lactici* prevented putrefaction of boiled milk; when introduced into the tissues it became pathogenic, its chemical product being an endotoxin which caused lowered body temperature, and wasting. The septicaemia which sometimes followed enteric and cholera was due to *B. coli*. The *B. coli* tended to produce illness, irregular in type and tending to get well and relapse. It acted by side infection, producing disease of the gall bladder, pancreas, or appendix; by direct effect on mucous membrane, producing such conditions as mucous or ulcerative colitis; or by passing into the blood stream, causing pyelitis, cystitis, thrombosis, meningitis, and infective endocarditis. In his remarks on treatment the lecturer pointed out that vaccination by the *B. coli* did not always cure, but produced remarkable results in certain cases. He instanced two cases of thrombosis in which the effect had been markedly good. He considered big doses dangerous, and recommended from 1 to 4 million of the dead bacilli per dose. A toxic dose produced definite local reaction and swelling.

Reviews.

THE POSITION OF THE MEDICAL PROFESSION: A GERMAN VIEW.

IN the preface to his book entitled *Der Arzt*,[1] Dr. FUERST complains that the public is in a state of extreme ignorance concerning the modern aims of medical practitioners. He holds the profession of medicine to be not the least important factor in modern civilization, as its work every decade grows greater, while it absorbs more duties as society appreciates in a wider degree the community of interest of all classes and their mutual dependence.

He begins with the familiar complaint of the overcrowding of the profession. The total number of qualified doctors in Germany is 31,640, which gives one doctor to 1,900 of population; but in towns the proportion is as high as 1 to 1,000, or in Berlin 1 to 700, which is the same as in London. Complaint is made of the difficulty of earning a living in country practice, and of the inadequate pay of district medical officers, while young men find few openings for practice. Nevertheless, he thinks the profession offers a fair prospect to suitable men. He asks: Who is suitable? and his answer is that the principal qualifications are a sound mind in a sound body, and the capacity for taking an optimistic view of life!

In Germany the State recognizes the principle "once a doctor always a doctor," so that the permission to practise is only withdrawn (1) if obtained by fraud, or (2) on conviction for a crime involving deprivation of civil rights. In the latter case the permission is only suspended, as civil rights are only withdrawn for a definite period. According to German law, the medical practitioner cannot divest himself of his privileges or his duties, and doctors who have ceased to practise still pay medical taxes, and are subjected to the control and discipline of the medical

[1] *Der Arzt, seine Stellung und seine Aufgaben im Kulturleben der Gegenwart.* Von Dr. Med. Moritz Fuerst in Hamburg. Leipzig: B. G. Teubner. (1909.)

courts. There is some controversy as to the status of the medical profession, but in many parts of Germany it is, we are told, regarded as a trade, practitioners having to take out a trade licence and pay trade taxes. In Prussia, however, it is admitted to be a scientific calling, the only exception being in the case of a doctor who carries on an institution for profit—such as a private lunatic asylum. The legal privileges of the doctor in Germany are that he alone may use medical titles or receive recognition by the State and public authorities, and that he alone is eligible to hold State and municipal appointments. His horse, carriage, and forage are exempt from military requisition; he is not liable to serve on juries or in various honorary municipal offices, and he may plead "professional secrecy" in a court of law; he must, however, serve on sanitary boards; he has a prior claim in bankruptcy over other creditors to the extent of one year's fees, and his instruments, including his watch and necessary clothes and the furniture of his consulting room, are exempt from distraint.

In Germany the highest ambition of the budding doctor is to become a specialist. Some of the medical courts and medical societies have laid down the rule that specialism must not be combined with general practice. In Prussia specialism is allowed only in certain subjects, and the specialist must qualify himself by studies carried on for at least three years beyond the ordinary curriculum either in a university department or some special institution, or in the wards of a large hospital, or by acting as assistant to a recognized specialist.

The medical profession in Germany is regulated by (1) the State and (2) voluntary societies. There are legally-qualified courts of medical honour which are elected by the medical men in each district, and are of two grades, a lower court composed solely of medical men, and a higher court of appeal where a legal assessor sits with the medical representatives. These courts try medical practitioners accused of various professional offences, and have the power to impose penalties, including censure, fines, and suspension from the medical franchise. As condemnation may involve the loss of public appointments, the decisions of these courts exercise considerable influence.

The voluntary societies are not scientific bodies, but are of the type of the Leipzig Union of German Medical Practitioners for the promotion of their business interests, founded by Dr. Hartmann. A principal object appears to be to watch over the relations of medical men to the State dispensary system, and to agitate for improved conditions of service. It would seem that these societies are practically trades unions; their methods are the same, and they contemplate organizing strikes if necessary to enforce their objects. Dr. Fuerst considers that the medical profession is not treated fairly by the State in Germany, and that the Social Democratic party desires to enslave it. He refers to schemes for converting the medical profession into a State service, a project which is not without supporters in this country. He thinks the plan is not in the interests of the profession or of the public or of science, and that the position of medical men would be unendurable if the public could demand their services at will. Doctors if made State officials would fall off in diligence and efficiency from the absence of competition. He approves a State service of doctors to perform such duties as attendance on the poor and on schools in connexion with State insurance, vaccination, and so forth.

Quackery, he says, is a great evil, though he does not believe that any law can stop it, as it is founded on inherent human weaknesses; he complains, however, of the state of the law in Germany, which sanctions medical treatment by unqualified persons and the traffic in secret remedies. He reproaches qualified men with being willing to take service with quacks. The most rampant form of quackery in Germany is the "*Naturheilkunde*," but this "Natural" treatment is a false pretence; scientific medicine includes the use of all "natural" means, drugs being as natural as water, sunlight, or fresh air: the title therefore misleads the public. Further, he states that it is within his knowledge that the claim to use no drugs is false, as in the course of his work as school doctor he has seen prescriptions drawn up by these so-called "natural treatment" doctors for morphine and other drugs.

Dr. Fuerst urges the doctor to be an active citizen, taking his share in public life, in which he is fitted by his education to play a prominent and leading part.

The book is a compendium of information upon the state of the medical profession in Germany, but in spite of some advantages, chiefly on the educational side, there is reason to doubt if its condition compares on the whole favourably with the corresponding condition in this country, either in official legal status, social recognition, or pecuniary reward.

NOTES ON BOOKS.

THE reissue of the *Dictionary of National Biography*, edited by Mr. SIDNEY LEE,[2] is now approaching completion. Volume xvii, to the publication of which we have not previously referred, contains a biography of Shakespeare, by the editor, the longest, we believe, in the book, since it occupies nearly fifty pages, and the biographies of the Scotts, a family which has achieved distinction in many directions, no less than some ninety individuals appearing here. Volume xviii has a long and sympathetic account of Smollett and a short biography of William Smellie. The next volume contains the biographies of Sydenham, Benjamin Travers, Dr. Hack Tuke, Samuel Tuke (the founder in 1792 of the retreat for the insane at York), and of Dr. Todd (the first Professor of Physiology at King's College, London). The twentieth volume, comprising the names in the fifty-eighth, fifty-ninth, and sixtieth volumes of the original edition, takes us as far as Whewell, the famous Master of Trinity College, Cambridge. Among the biographies in this volume are those of the Wellesleys, including the first Duke of Wellington, the Vanes, the Vaughans, and the Walpoles. Among the medical names are those of Dr. Waller and Dr. Charles West, while there is an interesting account of the checkered career of David Urquhart, diplomatist and publicist, to whose advocacy the naturalization of the Turkish bath in the British Isles is mainly due. The reissue will be completed by the publication of two more volumes.

The three volumes recording the occurrences at the Australasian Medical Congress (formerly called the Inter-Colonial Medical Congress of Australasia), held at Melbourne just a year ago, have now appeared, under the title of *Transactions of the Eighth Session of the Australasian Medical Congress*,[3] the editor-in-chief being Dr. ALEXANDER LEWERS. The proceedings are reported very fully, the remarks of some of the speakers at some of the debates being transcribed, it would seem, verbatim. The first volume covers general meetings and the work of the sections of medicine and surgery; the second the sections of obstetrics and gynaecology, public health, anatomy and physiology, and pathology and bacteriology; the third the work of the sections devoted to diseases of children, dermatology, neurology, ophthalmology, laryngology and otology, and military and naval hygiene. There are three indexes, the most useful being that in the third volume, which gives a classified list of all papers read. Among the most interesting discussions are those which took place in full session on the subjects of the relations of hospitals to the medical profession and the administrative treatment of syphilis. Several papers read in the section of military and naval hygiene contain references to the South African war, and show, amongst other things, that it was not alone from England that many physically unfit men started for the front.

Dr. MEYER has undertaken a difficult task, nevertheless his *Lexicon Medicum* is a satisfactory publication, complete and yet portable.[4] His method of including the necessary amount of lexicographical matter within a small compass is ingenious. The paper is very thin, yet the print is quite clear. The English reader who, for instance, wishes to know the Italian for "cough" will find "*Cough* (*e*) — Husten (*o*)." By *o* it is understood that under the word before it all translations are to be found. The reader, then, turning to the word in question in this case,

[2] *Dictionary of National Biography*. Edited by Sidney Lee. Vols. xvii–xx. London: Smith, Elder, and Co. 1909. (Roy. 8vo, pp. 1418, 1348, 1407, and 1394 respectively. 15s. per vol.)

[3] *Australasian Medical Congress. Transactions of the Eighth Session*. Melbourne: J. Kemp. 1909. (Roy. 8vo, pp. 1261, 3 vols.)

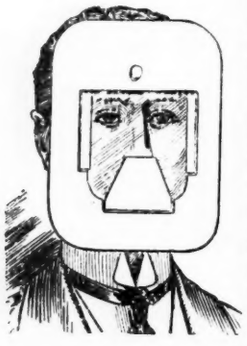
[4] *Lexicon Medicum; Pocket Medical Dictionary in Eight Languages*. Edited by Dr. J. Meyer, Berlin, in collaboration with Dr. O'C. Finigan, M.D.Berl., M.R.C.P.Lond., Assistant Physician, German Hospital, Dalston. London: W. Lockwood and Co.; and Berlin and Vienna: Urban and Schwarzenberg. 1909. (Fcap. 8vo, pp. 816. 20s.)

will find *Husten*, *e* cough, *f* toux, *i* tosse, *j* gaïsō; seki, *r* kaschelij, *s* tos, *u* köhögés." Thus, he will learn without much difficulty that "tosse" is the Italian for cough. The Hungarian doctor who desires to know the English for "cough" will find "*Köhögés* (*u*) = Husten (*o*)," and then, turning to that German heading, will learn what he sought; and so will the Frenchman, Italian, Japanese, Russian, or Spaniard when he looks up the word in his own language, as the reference will be to the German heading which includes "omnia" or "*o*." Those who read German works or wish to converse with German-speaking doctors or patients will find reference very convenient when they hear the German word and seek for its English equivalent direct, as it includes English among the rest. The compiler states in his preface that this lexicon is designed for the use of medical men who go to foreign countries as visitors to congresses, ship surgeons, medical officers in the services, students and inspectors of foreign sanitary methods, and for consultation and practice abroad, or with foreigners in the doctor's own country. The lexicon appears to be fairly complete, especially as to the medical names of disorders. A few English words in general use, such as "chicken-pox" and "stye," are omitted; in respect to the last word, we must add that not only do we fail to find "compère loriot," but "Gerstenkorn" and "Hordeolum" are likewise absent. The lexicon is, however, a very satisfactory compilation. It is significant to find that Spanish is becoming more and more studied, and not only in commercial circles; but it is not surprising, for from the frontier of Texas to Cape Horn the language of Cervantes and the cognate tongue of Camoens prevail. Many Englishmen go to Spanish America, and there is a good school of medicine at Buenos Ayres.

MEDICAL AND SURGICAL APPLIANCES.

Garrould's Zymotic Face Protector.

Messrs. E. and R. Garrould (150, Edgware Road, London, W.) have introduced a zymotic face protector for the use of medical men and nurses.



The invention consists of a shield of thin aluminium with a transparent outlook, and is designed for the purpose of protecting the face from infectious matter or involuntary expectoration in diphtheria, fever, or other cases. The only objection we can see to this apparatus is that the breath of the wearer condenses on the glass screen; and we fear that in cold weather, even in a ward, the condensation would interfere seriously with the sight when the protector was being worn for longer than a minute or so. Otherwise the protector would be useful; though it is very difficult to persuade nurses to wear screens of this sort. Fortunately the risk to the eyes, which this instrument is designed to avoid, is very slight. The price of the appliance is 10s. 6d.

Rectifier for Converting Alternating Currents.

The need for some simple and compact apparatus by means of which alternating current from the mains may be converted into continuous for the smaller powers has long been felt by users of electricity for medical and other purposes. The systems already in use, such as the electrolytic rectifier, the mercury lamp, and perhaps in a less degree the motor generating set, have their own disadvantages, either in the shape of unsatisfactory working, costly upkeep, or loss of efficiency in transformation. We have had the opportunity of witnessing a demonstration of a new apparatus, which possesses an efficiency of about 90 per cent., and may be said closely to approach the standard of the ideal rectifier. It has been placed on the market by the Premier Ampero Electric Company (Premier House, Dover Street, W.), whose name it bears. Its simplicity and portability are its first claims to favour, for there are no brushes to look after, no chemicals to employ, and no mercury lamps to replace; moreover, it can be safely left in the hands of one who is non-expert in electrical technique. The principle of the instrument depends upon the fact that if two secondaries of a transformer are alternately put into circuit at each half period, the induced current feeding the secondary circuit will be unidirectional. One of the secondaries of this transformer feeds two electro-magnets, which are wound so as to give the same polarity simultaneously. Then an armature, pivoted at the centre, is magnetized by two small coils, which are wound so as to give opposite polarity, and are excited by direct current taken from one of the cells on charge, or from a special cell if the rectifier is not being used for battery charging. The rapid change of the magnets in polarity when excited by alternating current causes the armature to be attracted and repelled synchronously, and, by means of a contact piece, its oscillations alternately make and break the contacts, each of which is connected to an end of the secondary winding. This is the rough outline of the plan by which the current is made continuous. An important feature of the device, which was effectively demonstrated, is its action as an automatic cut-out. If the current from the mains stops flowing, the rectifier itself will stop and automatically cut off the accumulator connexions. Add to this its freedom from noise and the prevention by means of small condensers of sparking at the contacts, and it will be evident that we have here no inconsiderable boon to the medical electrician and the hospital department.

MEDICINAL AND DIETETIC ARTICLES.

Bulgarian Sour Milk with Various Medicaments.

Mr. W. Martindale (10, New Cavendish Street, London, W.) is now preparing Bulgarian sour milk—to his preparation of which he gives the name Trilactine milk—with the addition of various medicaments. He has submitted for our examination specimens of a number of such combinations, including Trilactine milk with carbolic acid, potassium iodide, iron, and salicylates of bismuth and sodium; other kinds are also prepared. It is suggested that the Bulgarian sour milk may prove a useful medium for the administration of various drugs, especially where prolonged treatment is required. Examination of the samples submitted showed that the presence of the medicament had not prevented the formation of a very satisfactory curd. Microscopic slides of some of these preparations were also sent, and these showed abundance of the rod-like bacilli.

Biscuits with Protein.

We have received from Messrs. Huntley and Palmers, Limited (Reading) samples of three new biscuits which they have recently placed on the market, under the names "Apax," "Spartan," and "Akoll" biscuits, and which possess considerable dietetic value. They are particularly characterized by the large amounts of protein of vegetable origin which they contain. Our analysis showed the Spartan biscuits to contain 18.4 per cent. of protein, or about the same proportion as exists in beef or mutton of average fatness, and three times as much as is contained in bread. The Apax biscuits showed 23 per cent. of protein; both these biscuits are of the palatable and attractive character usually found in the products of this firm. Akoll biscuits are intended for diabetic patients or others to whom carbohydrates are forbidden; our analysis showed them to contain 54 per cent. of protein, and not more than negligible traces of sugar or starch. They are quite palatable and could doubtless form a large item in a diet for a long time without producing any distaste for them.

THE CIVIL SERVICE SUPERANNUATION ACT.

The Act to amend the Civil Service Superannuation Acts of 1834 to 1892 received the Royal assent on September 20th, and as many medical men may shortly find themselves requested by their patients to make an examination, and to fill up the prescribed form of medical certificate which it is necessary that every male civil servant over 55 years of age should supply if he desires to be brought under the provisions of the Act, the following summary explanatory of the main provisions of the Bill may prove useful:

Clause 3, Section 1.—The acceptance of the proposed scheme of superannuation to be optional to all members at present in the service under the age of 60 years.

Clause 2, Section 1.—The granting to the legal personal representatives of any officer with service of five years or upwards who dies in harness a gratuity equal to the annual salary and emoluments of his office.

Clause 1, Section 1.—The superannuation allowance to be calculated at one-eightieth of the annual salary and emoluments, multiplied by the number of completed years of service.

Clause 1, Section 2.—In addition to the superannuation allowance, the granting of a lump sum equal to one-thirtieth of the annual salary and emoluments, multiplied by the num'er of completed years of service, and

Clause 3, Section 1.—To the present members of the Service an addition to this sum of ½ per cent., in respect of each completed year of service at the time of passing this Act.

Clause 2, Section 2.—In the event of death of a pensioned officer who has received in superannuation allowance and additional allowances a sum of less than the amount of his annual salary and emoluments a gratuity will be granted equal to the deficiency.

The following illustration will show the method of calculation under the new scheme:

	£	s.	d.
Annual salary at 65s. per week, 52 weeks and one day...	169	10	10
Technical allowance of 3s. per week, 52 weeks and one day...	7	16	6
Sunday duty averages for the last 3 years of service	6	12	8
	£184	0	0

Taking the case of an officer retiring at thirty years' service, a gratuity equal to this sum would be granted, *plus* ½ per cent., for each completed year of service at the passing of this Act. Taking that service to be twenty-five years, 12½ per cent. should be added, thus:

Annual salary, £184; *plus* 12½ per cent., £23; total, £207.

The superannuation allowance would then be calculated at one-eightieth of £184—that is, £2 6s.—multiplied by the number of years' service (30), giving a total of £69 per annum.

The regulations made by the Treasury under Section 3 of the Act prescribes that any civil servant to whom the section applies, and who desires to take advantage of the provision of the Act, must make application before December 31st, 1909, and the application in the case of persons above 55 years of age at the date of the passing of the Act must be accompanied by a certificate in a prescribed form, signed by the medical officer of his department, or, where this is not practicable, by his medical attendant, the Treasury reserving the right to call for further medical evidence as to the condition of the applicant's health in any case in which they consider it desirable. The medical man who signs this certificate will be required to state whether the applicant is in good health and free from any disease or disorder tending to shorten life; whether he believe that he is, and has been, sober and temperate, and whether he is a person who could be recommended to an assurance society for life assurance at the ordinary rate of premium. If the medical man cannot answer this last question in the affirmative, he is required to state whether he considers him to be insurable at an addition to his actual age, or uninsurable.

We understand that where civil servants are in receipt of salaries of less than £150 a year, and are entitled to free medical attendance, arrangements have been made by the Government for the certificates to be supplied by the official medical officer, but; in the case of officers not entitled to free medical attendance, the certificate of any fully qualified medical man will be accepted, and a sum of 5s. towards the expense of obtaining it will be allowed from the public funds. This Bill provides virtually a new insurance to such members of the civil service varying in value from £170 to many hundred pounds, and it is clear that a fee of 5s. for the required medical examination is inadequate. The Association of British Postal Medical Officers has, we believe, already made representations to this effect, and it is to be hoped that medical men will not allow themselves to be misled into accepting fees that do not accord with the standard of payment for such valuable insurance work at the present time. Fees ranging from 10s. 6d. to 21s. cannot be said to be excessive for making these medical examinations and for granting the certificates.

A RECENT issue of the *Hong Kong Telegraph* contains an account of a ceremony at which Dr. G. M. Harston, of the ophthalmic department of the Tung Wa Hospital, was presented, on the eve of his departure from the colony on a holiday, with a number of pieces of embroidered silk. The presentation was made on behalf of the Chinese merchants of the colony in acknowledgement of Dr. Harston's services to their compatriots, and one of the pieces of silk bore an inscription to this effect in Chinese.

THE Association of Head Mistresses, which represents girls' public secondary schools of every type all over the country, recently passed a resolution expressing the opinion "that governing bodies should provide and, subject to parental consent, require medical inspection by a duly qualified doctor in the case of all children entering a public secondary school, and that provision should be made for reinspection from time to time."

THE SIXTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

BUDAPEST, AUGUST 29TH TO SEPTEMBER 4TH.

(*Continued from page 1166.*)

SECTION OF PSYCHIATRY.

Imbecility.

WEYGANDT (Hamburg) opened a discussion on the clinical and forensic aspects of imbecility. He pointed out that while psychical differentiation, together with any somatic peculiarities which might be present, the clinical course of the disease and the confirmation at the autopsy of the diagnosis made during life formed an ideal basis for classification in psychiatry, this had rarely been definitely carried out. In regard to imbecility in children, considerable advances have been made in this direction. Certain groups of cases had been more or less sharply differentiated, including amaurotic idiocy, affecting several members of one family, feeblemindedness associated with disturbances of the thyroid gland, imbecility associated with a Mongolian type, encephalic imbecility, hydrocephalic imbecility, meningitic imbecility, epileptic imbecility, infantile dementia, dementia praecox, and imbecility associated with inhibition of the brain development. But besides these types there were others which could not be clearly differentiated on account of the mild nature of the symptoms. From the forensic point of view, as also from that of providing for the care of such imbeciles, it was necessary to divide the cases into groups according to the peculiarity of the symptoms, for instance, the degree in which the patient could be influenced by favourable surroundings, the antipathy which the patient showed toward social intercourse, etc., as well as the severity of the disturbance. He cited as an example that while epilepsy was an important affection from the criminological standpoint, those severely afflicted being averse to social intercourse, were comparatively easily managed. From the forensic point of view, the least characterized cases formed the most important group. In determining whether a patient was criminally responsible, the best criterion could be formed by comparing the child with another, normal child of the same age, allowance being made for any anomalies independent of the intelligence.

SOMMER (Giessen) dealt with cases of idiocy, with children in schools for the mentally defective, and with children's reformatories, and stated that the cases met with in these three categories often presented common factors from the medical and psychological point of view. Sommer, speaking of the investigation of juvenile criminality, pointed out that the usual methods often failed, especially in children whose intellectual characters appeared to be normal, and in those showing moral defects, hysterical and epileptoid tendencies. He regarded it as probable that his methods of analysis of the exogenous and endogenous factors influencing the child could demonstrate that juvenile criminality was largely a pathological condition.

FISCHER (Budapest), who limited his remarks to moral insanity, discussed the symptoms. These included: Absolute confusion of ideas and incapability of being influenced, marked criminal impulsion, instability and restlessness, want of general activity and sociability, overestimation of self, exaggerated imagination, vanity, egotism, cynicism, absolute want of ethical conceptions, and of the consciousness of right and wrong and decency, as well as a number of signs of bodily degeneration. With special reference to the ethical defects, he stated that there was no tendency to progression, and then turned his attention to the best methods of taking care of such patients.

ROUBINOVITCH (Paris) dealt with the paedogogic psychiatry of *enfants difficiles*. He described five classes: Hyposthenics with a not backward mental condition, hyposthenics with backward mental development, hyposthenics with normal intelligence, and hypersthenics with defective intelligence, and lastly a mixed type. The conditions stood in some relationship to neuropathies or infantile psychopathies, while of the predisposing causes he emphasized sex, heredity, faulty education, bad hygienic and moral surroundings, etc. The diagnosis depended on the recognition of the character of the mental defects and the realization of the associated somatic defects.

Section of Dermatology and Venereal Diseases.

Light Treatment.

Veiel (Cannstadt) dealt with the physical methods of treating skin affections. After dealing briefly with the results obtained with sunlight, Finsen light, blue light, red right, etc., he came to the conclusion that Finsen light yielded better results than the mercury lamp. He then spoke in favour of liquid air and carbonic acid in a number of chronic affections. Roentgen rays were dangerous, but yielded excellent results in many cases. He regarded these rays as indispensable for herpes tonsurans, favus, purulent folliculitis of the head, dermatitis papillaris of the neck, while in sycosis he only used them in cases which had resisted all other forms of treatment. He spoke of the good cosmetic results in lupus, but believed that complete cure by Roentgen rays was rare. Since lupus had been treated by *x* rays, the number of secondary carcinomata had increased. The rays were suitable for circumscribed infiltrating eczema and for circumscribed dense psoriasis patches. They should not be used for acute or weeping eczema. Superficial epitheliomata could be cured by *x* rays, but deep-seated disease, and cases in which the regional glands were affected, were not benefited by this treatment. He dealt briefly with radium treatment, and concluded by referring to the excellent results obtained by Bier's passive congestion in cases of furuncle, carbuncle, and suppurating lymphatic glands.

Radium.

Wickham and Degrais (Paris) summarized the results which they had obtained with radium in the biological laboratory and radium institute of Paris. After considerable experimentation they had adopted the use of a filter made of a plate of lead covered with rubber having a thickness of 1.27 mm. After describing the apparatus which they now employed, they passed on to the consideration of the method of employment and results obtained. They had dealt with about 1,000 patients, of whom the greater part were suffering from malignant tumours. The oldest case had already lasted four and a half years. By introducing the radium in tubes into the tumours, by filtering and other methods, they had succeeded in "curing or improving" a number of cases of cutaneous and subcutaneous tumours, cancer, sarcoma, mycosis fungoides, lymphosarcoma, etc., affecting the skin, uterus, and other parts, without producing any superadded inflammatory reaction. They also reported that they had obtained "interesting results" in cancers affecting the mucous surfaces. In angiomata and cheloids excellent results had been obtained. Further, they spoke of "happy" results in superficial inflammatory and pruriginous lesions of the skin. Radium appeared to them to act specifically, but not necessarily destructively. Much interest was evinced in the lantern illustrations and casts which demonstrated the results obtained by radium in the different diseases mentioned.

Immunity to Syphilis.

Ehrmann (Vienna) reported the results of experimental investigations on the question of superinfection and immunity towards syphilis. A positive inoculation was possible before and even immediately after a primary sore developed, but the typical character became less marked the longer the period between the appearance of the primary sore and the inoculation. Later, the inoculation resulted only in a slight papule or no effect at all was produced. Temporary lesions might be obtained during the secondary stage, if large quantities of infective material were used or if the inoculations were repeated. After describing the absolute and relative immunity of the skin toward introduced spirochaetes, he dealt with those uncommon conditions in which the previously existing immunity had disappeared and the body reacted as if no change had taken place at all.

Hallopeau (Paris) described the recent additions to knowledge as to the evolution of syphilis. The parasites might take various routes on leaving the chancres. They might pass through the lymphatic channels, with or without causing an implication of the regional glands. They might pass directly into the capillaries. They might further penetrate the neighbouring tissues directly and infiltrate these gradually. The lymphatic glands exercised a marked attenuating effect on the parasites, and for this reason the infiltrating lesions were usually very virulent. When the parasites passed out of the lymphatic system, the infection was extended to the blood circulation and a roseolous eruption resulted. The generalization of the infection only took place at this stage. Hallopeau followed the parasites through the body and spoke of the affinity which they possessed for special tissues in different individuals.

Schereschewsky (Breslau) reported the details of his method of culturing spirochaetes, including the *pallida* and *dentium*. He stated that the *recurrens* lived on his nutrient medium for ten days, and could then be successfully inoculated on to mice.

Section of Urinary Diseases.

Anuria.

Kümmel (Hamburg) recognized two large groups of anuria—the occlusion anuria, in which the passage of urine was prevented by a calculus in the pelvis of the kidney; and true renal anuria. Out of 8 cases of calculous anuria on which he had operated, 7 showed signs of hydronephrosis, and only in 1 was the pelvis free from urine. The diagnosis could be made by the enlargement of the kidney, the pain on pressure over the affected kidney, the result of radioscopy, of cryoscopy, and the functional testing of the renal sufficiency. In cases of true renal anuria the process might be caused by inflammatory affections, by infective affections, by eclampsia, by toxic influences, including carbolic acid, and by other causes of nephritic changes. Reflex anuria undoubtedly existed, but the author had never seen a case. He was of opinion that these cases would prove to be more and more uncommon the further the diagnostic capabilities in urology advance.

Nephritis.

Casper (Berlin) discussed the nature of the various forms of nephritis. After touching on the more usual forms, all of which were necessarily affections of both kidneys, he spoke of what he termed *nephritis haematurica*, in which the urine in the intervals between the haemorrhages was apparently free from albumen. If tested with a delicate reagent, such as 20 per cent. of sulpho-salicylic acid, albumen would be found. *Nephritis circumscripta* was a form which corresponded to the French *néphrite parcellaire*. In this case the haemorrhages were produced by the action of bacteria in the kidneys. He further spoke of a form as "colic nephritis," in which the symptoms were identical with those of renal colic. The prognosis of nephritis was good, save in severe parenchymatous forms and in rapidly progressive cases of contracted kidney.

Extirpation of the Bladder.

Rihmer (Budapest) gave his experience of total extirpation of the bladder. After recording his general results, he turned to the difficult question of the implantation of the ureters. The best results were obtained by implanting them in the skin surface of the body, while implantation into the rectum must be given up. In none of his cases had recovery taken place. Ascending infection of the kidneys could be avoided by good technique. He also spoke of the modern idea of making an artificial bladder out of the rectum and short-circuiting the intestine by means of an artificial anus. Verhoogen and de Graeuwe (Brussels), who spoke on the same subject, said they had obtained the best results by leaving the ureters open in the wound or by suturing them to the skin. The results of implantation into the bowel had been very bad, but they devised a means by which better results could be obtained. After performing nephrostomy, they suggested making a cystectomy with ureterostomy into the caecum, which would be isolated for this purpose.

Section of Stomatology.

A number of papers dealing with the diseases and hygiene of the mouth were read. Among the more interesting of these were the influence of heredity on the pathology of the jaw and of the teeth, by Gallippe (Paris); the basis of the development of abnormalities of the arcus dentium, by Zsigmondy (Vienna); and also the present state of the scientific basis of dental caries prophylaxis, by Goadby (London).

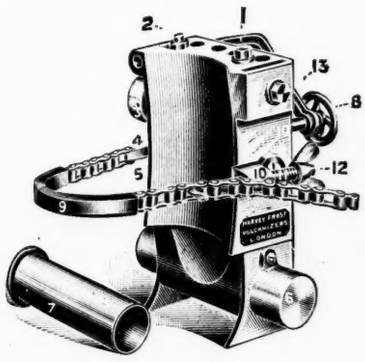
(To be continued.)

MOTOR CARS FOR MEDICAL MEN.

Selection and Repair of Tyres.

Messrs. Harvey, Frost and Co., who are probably best known to medical motorists as the proprietors of a very simple and ingenious vulcanizer, recently issued the third edition of a pamphlet entitled *Economy in Motor Tyres: their Choice, Care, and Repair*, and have formed at their offices at 27, Charing Cross Road, a collection of tyres where all or most of the principal makes may be seen. The pamphlet contains some judicious observations by Mr. H. J. Garland on the choice of tyres, their care and repair, together with a summary of the risks to be guarded against in fitting a tyre and in using it. The bulk of the pamphlet consists of specially prepared statements by the several manufacturers of the merits of the tyres they make. A copy will, we understand, be forwarded on application.

The vulcanizer made by this firm has already been mentioned in these columns, but it appears likely to be so useful that attention may again be called to it. It can be used for repairing both covers and inner tubes; it consists of a tubular boiler of the form indicated in the drawing. The heat is furnished by the spirit lamp (6), the heat of which can be regulated by the cover (7); a temperature sufficiently high for vulcanizing is obtained by steam under pressure, (2) being the safety valve and (3) the pressure gauge. On one side the boiler presents a flat surface, against which the inner tube can be held for vulcanizing, by turning the screw wheel (8). The other side is curved to fit the tyre, being held in position by the chain and band (5 and 9), which is tightened by the thumb screw (12). The principal feature of the invention is that the result is not a patch, but new vulcanized material introduced into, and so to say welded with, the original rubber and there vulcanized. The edges of the tear are first freely excised on the slant, so as to produce a V-shaped cavity. The sides are then rasped to get a rough surface and treated with naphtha solution. Prepared rubber material, containing the necessary proportion of sulphur and supplied in sheets is softened by heating and is then easily worked into the tear; after it has cooled it is sliced level with a sharp knife and worked smooth with a roller. The object of vulcanization is to bring about the change in the physical properties of india-rubber which is due to the combination of the rubber with sulphur. This chemical combination only takes place at a high temperature and the next step in the process is to bring the soft rubber preparation which has been worked with the tear into close apposition with the boiler, which during these preparations has probably reached the required temperature. The actual vulcanizing takes about a quarter of an hour or twenty minutes, and after the removal from the vulcanizer the part should be allowed to cool thoroughly before being used. The cost of tyres is so serious a part of the upkeep of a car that this method of vulcanizing, which has already commended itself to many medical motorists, will probably become still more generally used in the future. It appeared to us when demonstrated recently to be at once simple and practical, and there can be no doubt that the result is to give a very satisfactory join, which appears to stand rough usage as well as the original tyre or tube. The price of the portable vulcanizer is 5 guineas, with 12s. 6d. extra for necessary tools and extra materials; a discount of 5 per cent. is allowed for cash. A larger size, for fixing in the garage, can be obtained for 12 guineas, with 2 guineas extra for tools and materials.



Insurance.

The notes published with regard to motor-car insurance in the Journal of last week, pages 1173 and 1176, have brought a number of inquiries, and we may say that the owner of a car has considerable choice, and, as was pointed out last week, can practically adapt the benefit insured to his own particular needs. The rates are governed by the present full value taken in conjunction with the horse power. In estimating the horse power the lower of the two named by the maker is taken. As we have said the "doctor's policy" appears to be that most likely to meet the needs of medical men. Full particulars can be obtained on application to the Secretary and Agent of the Medical Insurance Committee, 429, Strand, London, W.C.

According to the New York *Medical Record*, it is reported from Colorado Springs that valuable deposits of uranium, "the mother substance of radium," have been discovered at Woodland Park, a few miles west of Mainton, Colorado.

LITERARY NOTES.

Miss Rotha Mary Clay has written a book, entitled *The Mediaeval Hospitals of England*, which will be published as one of the volumes of Messrs. Methuen's series of "Antiquary's Books."

In the *Medical Record* of October 2nd, Dr. James J. Walsh, who some time ago recalled the fact (see British Medical Journal, December 26th, 1908, p. 1876) that the first American medical school was that of the University of Mexico, in which a chair of medicine was founded—according to one chronicler in 1578, according to another in 1580—deals with the beginnings of clinical teaching in America. He says the first hospital in America was also founded in the city of Mexico nearly four centuries ago, and is still in existence. It was used for the purposes of clinical teaching over three centuries and a half ago. He quotes Professor Bourne of Yale as saying in the third volume of the American Nation Series:

> It is not too much to say that the institutions of learning founded in Mexico in the sixteenth century, in number, range of studies, and standard of attainments by the officers, surpassed anything existing in English-America until the nineteenth century. Mexican scholars made distinguished achievements in some branches of science, particularly medicine and surgery, but pre-eminently linguistics, history, and anthropology.

The first universities in America were founded by a decree of the King of Spain in 1551. Both the University of Lima and that of Mexico had medical schools before the end of the sixteenth century. During the seventeenth century both these universities were fully organized with faculties of theology, law, and medicine, which were open only to men who had gone through at least three years of undergraduate work. The first hospital on the European model was built by Hernando Cortés, the Conqueror of Mexico, before 1524. Cortés, possibly as a salve to his conscience for his treatment of the natives, obtained a grant of land from the Emperor Charles V, and erected on it a hospital which he endowed out of the revenues obtained from the property conferred upon him by the Spanish Crown. The hospital was originally called by his desire the Immaculate Conception. In the church adjoining the hospital, however, there was a shrine with a famous image of Christ, called Jesus Nazareno. On account of the fame of this, says Dr. Walsh, both church and hospital came to be called by this title, so that this first Mexican hospital is now known as the Hospital of Jesus. Cortés declared in his will that he had established and endowed the hospital "in recognition of the graces and mercies that God had bestowed upon him in his discovery and conquest of New Spain, and as an expiation or satisfaction for his sins, and especially for any of his faults that he might have forgotten, but might still be a burden on his conscience, though, owing to his forgetfulness, he could not make a special atonement for them." Cortés so arranged the endowment that it has continued to be paid down to the present day. It was never given over to the State, but is a special corporation under a superintendent, and so it has survived the changes of government and the revolutions in Mexico. Cortes's principal descendants are the Italian Dukes of Terranova e Montaleone, who still have the right to name an agent to supervise the hospital. This they do regularly, so that the institution has been kept to its original intention and usefulness. But as we know from Prescott, who quotes Spanish authorities for the statement, there were hospitals in Mexico long before the Conquest. Dr. Walsh cites a passage from Hubert Howe Bancroft's *Native Races of the Pacific States of North America* to the effect that among the Mexicans for severe cases the expense of treatment which could not be borne except by the wealthy classes, hospitals were established by the Government in all the larger cities of the native states of Mexico before the coming of the Spaniards, and experienced doctors, surgeons, and nurses well versed in all the native healing arts were provided for them. According to Dr. Walsh there was even clinical teaching in these hospitals; and as it was the custom for the profession of healing to descend from father to son, the opportunities for a good training in medicine and surgery will be appreciated. Women occupied positions in these hospitals not alone as nurses but also as physicians, and women's diseases and obstetrics were entirely in their hands.

In the *American Journal of Clinical Medicine* for October, Dr. George H. Tichenor, of New Orleans, gives an account of the career of William Walker, who, like Thomas Dover, of opium and ipecacuanha powder fame, was a filibuster as well as a doctor. But Walker was a good deal else besides. He was born at Nashville, Tennessee, in 1824. He studied law at the University of Tennessee and afterwards medicine at Edinburgh. After practising as a doctor for a time he took up law as a profession in New Orleans. Whether Themis refused to smile upon him, or whether he wearied of her, he next tried journalism. At that time the gold fever was raging in California, and Walker became associate editor of the *San Francisco Herald*. But his true vocation seems to have been to "extend the area of freedom." He had Napoleonic ambitions, but without the ability—or the luck—to realize them. In 1853, when both the United States and Mexico had troubles enough on their hands to occupy their attention, Walker made a dash into Lower California with fifty-two men, proclaimed a republic, and elected himself president. He gathered some adherents about him, but the Mexicans drove him across the border, where he surrendered to American troops. He was tried, but acquitted of violating American neutrality. In 1854 the last remains of the expedition reached San Francisco, where the ex-president subsided into the editorial chair of a daily paper owned by one Byron Cole, who had some interest in Nicaragua. That same year a revolution broke out in Nicaragua, and Cole obtained a colonization grant, under the terms of which 300 Americans were to be brought in and granted the privilege of bearing arms. This grant was forwarded to Walker, who collected a small force and invaded Nicaragua, where somehow he became commander-in-chief of the army, and a year later President of Nicaragua. Adventurers flocked to his standard from all parts, among them Joaquim Miller, the poet. It was not long, however, before Walker's ambition soared so high as to make it evident to the Central American Republics that if they did not take strenuous action he would soon become emperor of the whole region. They combined against him, and war was declared upon Nicaragua. At that time Walker had 10,000 men, while the allied army numbered 21,000. He might have been victorious but for the hostility of Vanderbilt "the First," who withdrew his ships from Nicaraguan ports, thus cutting off his supplies. He had to leave Nicaragua and return to the United States, where he was received as a hero. But his career as a filibuster was not yet at an end. In a few months he took part in a revolution in Honduras. He was compelled to surrender to the British, who handed him over to the Honduras authorities, and he was executed on May 1st, 1857—a sad end for one whose career was more full of interest than that of the hero of Kipling's story, "The Man Who Would Be King." Walker wrote a part of his own history in a book entitled *The War in Nicaragua*. In it he mentions the stamping out of epidemics of dysentery and cholera among his soldiers, a fact which shows that he had not forgotten his first profession.

The American Western Association for the Preservation of Medical Records was organized in May, 1909, for the purpose of collecting the historical and biographical records of the profession of the West and South of the United States. Its aim is to preserve anything and everything pertaining to Western medicine. Arrangements have been made with the Lloyd Library, Cincinnati, Ohio, for the proper housing of the material collected. This material will be systematically arranged, catalogued, and properly preserved, so that it can be made available for research work. The Association is particularly anxious to obtain (1) medical journals published in the West and South prior to 1880; (2) medical books or pamphlets written or published in the West; (3) manuscripts and autographs of early Western physicians; (4) old diplomas and other documents of a medical character; (5) proceedings of medical societies; (6) reports of hospitals and other medical institutions; (7) catalogues and announcements of Western medical colleges of all "schools"; (8) biographies and portraits of Western physicians; (9) information and material of any kind pertaining to medicine and medical men and affairs in the West; (10) curios of a medico-historical character. An appeal to all persons who may have such documents or objects of the kind described has been issued by Drs. C. A. L. Reed, Chairman, and Otto Juettner, Secretary of the Association. The Librarian is Dr. A. G. Drury, of Chicago. We mention this appeal because it is one among many other evidences of the interest in things connected with medical history that has of late years been aroused, and, as the pages of the JOURNAL show, is steadily becoming keener.

Medical News.

DR. JAMIESON B. HURRY, well known as the historian of Reading Abbey, has been placed on the Commission of the Peace for the Borough of Reading.

THE new hall of the College of Physicians of Philadelphia, described by Dr. Keen in the JOURNAL of last week, page 1161, will be dedicated on November 10th.

THE committee in charge of the testimonial to Professor Ogston desires to intimate that members of the medical profession wishing to contribute should send their subscriptions to the Honorary Secretary, Dr. Mackenzie Booth, 1, Carden Place, Aberdeen, at an early date, as the subscription list must soon be closed.

THE Asylums Committee of the London County Council has granted Dr. T. S. Logan, Assistant Medical Officer of the Epileptic Colony, twelve months' leave of absence without pay in order that he may assist, at the request of the Secretary of Public Health and Charities of the Republic of Cuba, in the remodelling and reorganization of the State Asylum for the Insane in Mazorra, Cuba.

THE members of the Balneological and Climatological Section of the Royal Society of Medicine will dine together at the Imperial Restaurant, Regent Street, on October 29th, Dr. Leonard Williams in the chair. The principal event of the evening will be the presentation to Dr. S. P. Sunderland of a testimonial in acknowledgement of his services as secretary to the late Balneological Society during thirteen years.

THE tenth annual dinner for medical men residing in West Somerset will be held at the London Hotel, Taunton, on Tuesday, November 2nd, at 7 p.m. The chairman will be Mr. Chas. Farrant. The price of the dinner will be 6s. a head, exclusive of wine, etc., and guests, medical or other, will be welcome. Those who wish to be present are requested to intimate their intention by Saturday, October 30th, to the Honorary Secretary, Dr. W. B. Winckworth, Sussex Lodge, Taunton.

THE honorary secretaries of King Edward's Hospital Fund for London have received from the Foreign Office a cheque for £4,775, this being half the net profits of the late Franco-British Exhibition. Under one of the clauses of the charter by which that undertaking was incorporated it was provided that the net profits should be divided equally between France and England and placed in the hands of the respective Foreign Secretaries of these countries for devotion to such public object as they might select. The other moiety has been accordingly sent to France.

A QUARTERLY court of the directors of the Society for Relief of Widows and Orphans of Medical Men was held on October 13th, Dr. Blandford, President, in the chair. Nineteen members of the court were present. A vote of condolence with the family of the late Sir Thomas Smith, Bart., was passed from the Chair. Sir Thomas Smith was elected a member in 1870, had held the offices of Director and Vice-President, had always taken the keenest interest in the welfare of the society, and was a regular attendant at the quarterly courts. The death was announced of one of the annuitants of the charity, a widow, who came on the funds in 1907, and received in grants the sum of £145. The sum of £518 was voted to be distributed among the annuitants as a gift at Christmas, each widow to receive £10, each orphan £3, or the orphans in receipt of grants from the Copeland Fund £5 each. Membership is open to any registered medical practitioner who at the time of his election is resident within a twenty-mile radius of Charing Cross. The subscription is 2 guineas per annum, or a member may become a life member by paying one sum, the amount of which is fixed by the by-laws of the society. Relief is only granted to the widows or orphans of deceased members, and since the last court six letters had been received from widows of medical men asking for relief, but this had to be refused as their husbands had not been members of the society. Application forms for membership and full particulars may be obtained from the Secretary at 11, Chandos Street, Cavendish Square. The next election will be on January 12th, 1910. The invested funds of the society now amount to £100,500.

British Medical Journal.

SATURDAY, OCTOBER 23rd, 1909.

FIVE YEARS AND A BITTOCK.

We are going through a period when the system of medical education which has grown up during the last two or three generations is being subjected to criticism from many quarters, and it is, of course, very far from desirable that the system and the mode of its administration should be stereotyped. A living organization must be continuously adapting itself to changes in the environment, and it must be admitted that medical teaching has not lacked during the last decade this stimulus to alter its methods and their application. The growth, both in complexity and number of the subjects with which a student ought to be acquainted, has tended to lengthen the curriculum, while the more practical way in which such subjects as chemistry, physiology, pharmacology, and pathology are now taught has combined, with the great improvement in textbooks in all subjects, to render a reconsideration of the distribution of the student's time imperative.

The question, as it affects Edinburgh, has, during the past year, been under the consideration of the Pathological Club, a body primarily designed for the discussion of the latest original work, but consisting of persons all more or less actively engaged in teaching. After two meetings, at which the subject was discussed in its general bearings, a committee representative of teachers of the chief subjects in the medical curriculum was appointed, held numerous meetings, and presented a draft report. This draft having been fully considered by the club at three long meetings, has now been published in the *Edinburgh Medical Journal*.[1] Though it is in its details designed to meet the special case of Edinburgh, it discusses many principles of general application, and the conclusions and recommendations at which it arrives will be found well worthy of study by those interested in the success of other medical scoools.

The first and, as it appears to us, the most important principle which emerges is that which was enunciated by Professor Starling in the important discussion held during the Sheffield Meeting of the British Medical Association in 1908, when he said that from the very commencement of his medical curriculum the work of the student should be "directed," by which he meant that every scientific subject that he studied, whether chemistry, physics, or physiology, should be considered only in its bearings on his future work as a medical man. This principle has been recognized in the new regulations of the University of London. In the syllabus for inorganic chemistry and physics it is stated that the subjects are to be treated in an elementary manner, and with special reference to their application to the subsequent work of the student. In general biology it is said that "the whole course is intended as a general "introduction to the science of life, with special "reference to the later work of the student of "medicine." In organic and applied chemistry, a subject for the second examination, it is said that it is "to be treated in an elementary manner, and with "special regard to its applications in physiology, "pharmacology, and pathology"; and it is directed that in the practical course of chemical and experimental physiology special stress shall "be laid "on such methods as are applicable to man or "have bearing on the subsequent work of the "student."

Sir William Whitla told the Association at Belfast that the same principle has been embodied by the new University in that city in its regulations for medical degrees, and we now find teachers in Edinburgh endorsing it, though perhaps in not quite such distinct terms. It is pointed out in their report that in all medical schools there is at present a dangerous tendency to treat each subject as if it were in a water-tight compartment by itself, and that one of the unsatisfactory features in medical education everywhere at present is the growing tendency towards a divorce between the scientific and practical subjects. As one remedy for this it is suggested that, in the case of physiology, pathology, and materia medica, it would be well if amongst the assistants were found those who ultimately looked forward to the practice of medicine, and also, in the case of the first two departments, to the practice of surgery, a reason given being that the fact that men intending to apply scientific knowledge and training to the practical side of the profession were working in a scientific department would inevitably keep practical questions to the forefront in the department. Again, in the recommendations with regard to chemistry, it is said that instruction given in inorganic chemistry should have relation especially to physiology, materia medica, and clinical medicine. With regard to this last aspect of the subject, it is said that the teaching, both theoretical and practical, should be extended, and that the arrangement of the details constitutes and calls for co-operation between the departments of physiology and materia medica.

Professor Starling in his address, to which we have already referred, expresses his belief that physiology, even more than the other sciences mentioned, should be taught practically in its relation to medicine, the whole aim of the course being to give, by reference from man to animal and from animal to man, as real a knowledge as possible of the processes which in the wards the student has to infer by the ordinary methods of diagnosis. The Edinburgh club, to quote the words of the report, "fully homologate these views," and especially agree with the distinction Professor Starling drew between physiology as a branch of pure science and as a subject of medical education. Again, the report points out that were such practical co-operation between the teachers of chemistry, physiology, and materia medica in the arrangement of the practical work assured, the necessity for a practical course in pharmacology would not arise. With regard to medicine, surgery, and midwifery, the Edinburgh report, while holding that systematic lectures are necessary at the appropriate period in his curriculum in order to guide the student to a general view of the subject, yet expresses the opinion that when this introduction has been given "the usefulness of the systematic "lecture is largely at an end, and the future training "of the student should be by clinical instruction

[1] October, 1909

"supplemented by work with a textbook." Further, in a paragraph dealing specifically with medicine, it is said "the general danger inherent in syste-"matic lecture courses in medicine we take to be "their being turned into a substitute for textbook "study." Such a statement, we believe, indicates a considerable change of view from that formerly held in Edinburgh, but it will seem to many to do no more than recognize accomplished facts.

The report further expresses the opinion that many of the difficulties in arranging for the later subjects of the curriculum would disappear if the student were required to follow a fixed curriculum, and gives in great detail a scheme for such curriculum. The scheme is, of course, specially adapted to the needs of Edinburgh, but it may be noted that it involves an extension of the curriculum to five years and one summer session, the sixth summer session to begin in April so as to allow about two months for operative surgery and clinical work before the final examination. The action of the University of London in extending the curriculum to a minimum of five years and a half after matriculation was a good deal criticized, but the Edinburgh teachers have recommended a long step in the same direction. Moreover, recognition of the desirability of the change is growing, and the new universities of Bristol and Wales have, it appears, boldly faced the position from the beginning, and fixed the minimum length of the curriculum at five and a half and six years respectively.

THE CURE OF DISEASE BY INCUBATION.*

The practice of incubation seems to be one of those customs which are common to humanity, irrespective of time, or race, or creed. From the very earliest ages there has been a firm belief inherent in mankind in the efficacy of passing the night in a particular temple, church, or shrine, as a means of curing disease; pagan and Christian alike hoped for the same blessing, a vision during sleep of the god or saint invoked, who would give instructions as to the way of regaining health, if he did not effect an immediate cure. In ancient Greece as in modern Italy, votive tablets recording cures, with models of the part supposed to have been the seat of disease, were hung on the walls or about the altar. Fees, too, had to be paid, and were strictly exacted, the penalty for remissness in this part of the ritual being recurrence of the disease. The revenues of these temples must have been very considerable. Pausanias tells of a patient, Phalysios of Naupaktos, who, as a token of gratitude for the restoration of his sight, gave two thousand gold staters (equivalent to £1,900) to the Temple of Asklepios.

Miss Mary Hamilton, in her *Incubation*, has given an interesting and comprehensive account of the origin and growth of this custom, from its beginning far back in the mists of forgotten ages down to our own time. The chief patrons of incubation were chthonian deities, that is, "heroes who had gone down into "the earth and were invested with her powers." Of these Asklepios was the most important. The first mention of the rite in literature is the description of it as carried out in one of the temples of Asklepios given in the *Ploutos* of Aristophanes. The son of Apollo, endowed by his father with the gift of healing, Asklepios was worshipped far and wide during many centuries as the restorer of health. His cult originated in Thessaly, the home of his mother, Koronis, and thence spread rapidly all over Greece, numerous temples being erected in his honour. Though the sick were healed at nearly all these shrines, three were held in special renown for cures—Trikka, the oldest of all; Kos, and Epidauros. The last named was the most famous of all; it had the reputation of being the favourite sanctuary of the god, and was in consequence the most popular resort of invalids from all parts of the ancient world. Readers of *Marius the Epicurean* will remember the charming account of the temple and its priests, and the régime undergone by all who came seeking health; those who wish for a living picture of what Epidauros must have been at the height of its fame cannot do better than read the account of it given by Pater. The fame of Asklepios was not confined to Greece, but spread to Rome, where there are traces of a temple dedicated to him on the Tiber Island. The site is now occupied by the church of San Bartolomeo. Under the altar of this church, which was built on the ruins of the temple about the ninth century, is an ancient well. This well is believed to have played a part in the rites of incubation, which inscriptions found among the ruins show to have been practised there.

But the son of Apollo was not the only health giving deity worshipped by the Greeks. Amphiaraos ranks among the chthonian deities of prehistoric times. Incubation was practised in his temples, the chief of which was near Oropos, in those of Trophonios at Lebadeia in Boeotia, and in those of Pluto in Asia Minor. The custom was introduced into Egypt by Greek explorers, the temples of Serapis and Isis becoming famous throughout the world for their cures.

During the first centuries of Christianity the practice of incubation increased throughout the Roman Empire to an extraordinary extent, and formed a great obstacle to the advance of the new faith. The temples of the patrons of health were the last strongholds of the old gods, for their worshippers refused to give up deities who had it in their power to grant health and strength in answer to prayer. The Church triumphed finally by replacing the pagan temples by Christian churches, where miraculous cures were wrought through one of the saints. The ancient rites and ceremonies were retained, only slightly altered in accordance with Christian ideas. As Miss Hamilton says: "It is no far-fetched conclusion to suppose that "the similarity in ideas and practices of such "churches and temples arose from a Christianizing "of the pagan shrines and the retention of the "former methods in order to suit the customs of "the clientèle."

The practice of incubation in Christian churches rapidly became general throughout Europe, Asia Minor, and Egypt. Different districts possessed different saints gifted with the power of healing. Thus, Ss. Cosmas and Damian had their head quarters at Byzantium; Asia Minor was under the special patronage of the Archangel Michael, and St. Theckla wrought miracles at Seleucia in Isauria. Gaul was particularly rich in incubation centres: St. Martin cured in his church at Tours, St. Julian at Arvernus, St. Fides at Conques in Rouergue, and St. Maximinus at Treves. In Britain there is a record of the same custom in the church of St. Peter and Paul at Cambridge.

Incubation still exists. Far from succumbing to the

* *Incubation; or, The Cure of Disease in Pagan Temples and Christian Churches.* By Mary Hamilton, M.A., Carnegie Research Scholar. Published by W. C. Henderson and Son, St. Andrews; and Simpkin, Marshall, Hamilton, Kent, and Co., London. 1906. (Pp. 223.)

gradual decay that has overtaken most old customs, it still flourishes in Greece, and in parts of Italy and Austria. To this day the ritual remains almost unchanged, and the tourist in Calabria, in the neighbourhood of Naples, or in the Grecian Isles may see incubation practised as it was in the days when Zeus still reigned in Olympus.

HOME RULE FOR LONDON.

In his speech at the opening of the new laboratories last week at the London Hospital, Professor Osler gave expression to the dissatisfaction of the medical students of London with the present government of its university. In his impeachment of the university, Dr. Osler, so far as we can gather, could rely on the support, not only of the London Hospital, but of all the medical schools of the metropolis. In all there seems to be a sense of irritation against the university, and the same feeling that, although labelled schools of the university and bound to conform to its cast-iron regulations, they have no voice or influence in its affairs, nor in the determination of the curriculum or examinations which their students have to undergo. Throughout London there is the same feeling of despondency as to the condition of the university. The Boards of Studies report—nothing happens. The Faculty of Medicine appoints committees and sends up their recommendations to the Senate—nothing happens. Some months ago we gave particulars of a scheme which was passed unanimously by the Faculty of Medicine; it was devised to impart some common life to the medical side of the university, by ensuring that the views of the medical schools and of those actively engaged in the training of medical students in London should be seriously considered by the Senate. Under this scheme there was some expectation that the members of the Medical Faculty might be masters in their own house, and might really determine the medical affairs of the university. A Faculty of some 400 members odd is not fitted to act as an executive body, or to thresh out the details of any policy. The Faculty of Medicine therefore agreed to delegate the advisory powers which it possesses by statute to a Faculty Board, consisting of about thirty members, representative of all branches of medicine and of all medical schools of London. The Senate of the university was, at the same time, asked to engage itself to consult this board on all matters concerning the medical curriculum and examinations, the recognition of teachers, the admission of schools, and generally on all other subjects coming within the purview of the Faculty of Medicine. We gather that this proposal was welcomed by the Academic Council, which recommended it for adoption by the Senate. The External Council, however, which it might have been thought would not have felt called on to interfere in a matter which concerned internal students and the teachers and schools in London exclusively, succeeded, at the meeting of the Senate last Wednesday, in whittling away the scheme to such an extent that the emasculated Faculty Board, as approved by the Senate, can be of little value to the Faculty or to the medical schools of London. It would hardly be profitable to inquire into the motives which inspired the External Council in this wrecking policy, but we imagine that this rebuff to the Medical Faculty will strengthen the hands of those who believe that a real university school of medicine will never be established until the Medical Faculty is freed from the incubus of the external student, and from the politics of those who are elected to guard his supposed interests on the Senate. At the present time the external student forms only one-fifth of the whole number entering for the second medical examination, and a still smaller minority of the candidates for the M.B., B.S. examination. Apparently, however, the opinions of his representatives on the Senate carry greater weight than those of the whole Medical Faculty of London. We would commend a study of Wednesday's division list on the question of a Medical Faculty Board, when it is published, to the attention of Mr. Wallis and the other Deans of the London Medical Schools, who are concerned for the welfare of their students and their schools. Under the scheme proposed for the Faculty Board, the Faculty of Medicine, the Academic Council, the External Council, and the Senate would not have abrogated any of their own powers; the Board would have been purely advisory. The Senate could have accepted or rejected the advice of such a board, but the board would have been able to speak with sufficient authority for its advice to have been of the utmost value to the Senate. Had the experiment been made, its success or failure would have served as a guide in determining the future constitution and working of the university, and would therefore have been of assistance to the Royal Commission. We hope that by the combined efforts of the deans of the schools and the Faculty of Medicine the position may be brought fully to the notice of that Commission.

THE ASYLUM OFFICERS' SUPERANNUATION BILL.

When this Bill was before the House of Lords for its second reading last week, Lord Belper hinted at a curious difficulty which had arisen in connexion with the scales of superannuation and contribution laid down in the bill in reference to asylum workers. The scale selected and embodied in this measure was one open to objection as being too liberal as compared with the treatment of other similar servants, and would therefore require amendment. At the stage at which the bill has arrived, having passed through the Lower House, this amendment can only now be made in the Lords; and, as this would mean an alteration of the financial proposals of the Bill, it would necessarily raise the question of privilege between the two Houses. In the present relations of the Government and the Upper House, it would be especially awkward for the Government themselves to move amendments in the Lords for the purpose of altering financial proposals sent up from the Commons, and it would be somewhat difficult for the Government even to assent to amendments of a purely financial kind if moved in the Lords from an independent quarter. The friends of the bill by no means desire that any attempt should be made to harmonize the scale of superannuation with that granted to other public servants. They hold that the exceptional and dangerous duties performed by asylum officers justify more liberal treatment. The position is a delicate and difficult one, but it is to be hoped that the financial question will not be raised, and that the Home Office will assist the bill to pass with such general amendments as may be really necessary to add a useful measure to the Statute Book. The Committee stage will come on in the Lords early next week.

MILCH COWS AND SCARLET FEVER.

It may be remembered that in June, 1909, an outbreak of scarlet fever occurred in London and Surrey which affected a great many persons, and was traced to milk distributed by a company having widespread operations in the metropolitan district. There was some doubt as to how the milk became infected, and a

further report on this point has now been issued by the Public Health Committee of the London County Council. Having regard to the extent of the outbreak—upwards of 400 persons were affected—a joint inquiry was undertaken by Dr. W. H. Hamer and Dr. T. Henry Jones (acting for Dr. Seaton, M.O.H. for Surrey), with the assistance of Dr. Mervyn Gordon as bacteriologist. Assistance was also rendered by the medical officers of the affected districts, and by the officers of the milk company. Sir Shirley Murphy states that from a perusal of the joint report no reasonable doubt can be entertained that the milk of a particular farm was responsible for the occurrences of the scarlet fever in the two counties. In the past, two hypotheses of milk infection have been discussed, the one that the milk acquires its infective property from a human source, that it is in fact infected by the milker or by some other person suffering from scarlet fever; the other, that milk is infected by some condition of a cow or cows. It has been observed on former occasions that inquiry has failed to demonstrate that human agency has been responsible for the infective condition of the milk; such inquiry has often shown that even when one or more persons engaged on the farm have suffered from scarlet fever the dates of their infection have been subsequent to the dates of infection of the consumers of the milk—in fact that the milkers suffered, as other persons, from consumption of the milk. In the outbreak investigated by Dr. Hamer and Dr. Jones it was found that scarlet fever did occur in the family of a milker, but that the evidence in connexion with this occurrence could not be regarded as affording explanation of the infection of the milk by human agency, while it distinctly suggested that the milk was infective before leaving the farm. Careful inquiry in the neighbourhood of the farm failed to yield any evidence of the existence of a human source of infection of the milk. Sir Shirley Murphy points out that in similar circumstances Sir William Power, when investigating in 1882 an outbreak of scarlet fever in certain London districts, made the suggestion that inasmuch as "there is one sort of relation between "scarlatina and accidents of the puerperal state, "another sort of relation becomes comparatively easy "of belief," in fact, that "if scarlatina in man have "other animal source than human source, it may be "that one such source is the cow that has recently "calved, a cow either not at all ill (except for her "parturition) or not so obviously ill as to prevent her "milk being used for human consumption." The suggestion thus tentatively made, in 1882, assumed greater importance when Sir William Power in 1885 advanced evidence of the bovine origin of scarlet fever occurring in persons consuming milk from a Hendon farm, the cows at which were affected with an eruption of the teats and udder. A similar development of scarlet fever in man, associated with the consumption of the milk of similarly affected newly-calved cows, or cows infected from such newly-calved cows, has been observed in a number of instances since that date. In London in 1892 and again in 1894 and 1902, considerable prevalence of scarlet fever, due to infected milk, was strongly suspected to have been originally of bovine origin. In the present instance a like possibility was naturally entertained, and it has been found possible, by study of the farm operations in minute detail, to show that just at the time when the milk first began to show infectious property, there was added to it the milk of three cows which had recently calved, and that the calf of one of them had died after being suckled by the cow for four or five days. These circumstances, together with the fact that the three cows mentioned and other cows at the farm showed at the time of the inquiry appearances upon teats and udders suggestive of "Hendon disease," render it probable that a morbid condition of the cow was responsible for the subsequent human illness. In conclusion, Sir Shirley Murphy says that from the administrative side it deserves to be noted that, with the cordial assistance of the manager and secretary of the company, whose action deserves recognition, early localization of the source of the mischief was possible. This was due to the particular system of distribution of milk maintained by the company—a system which had proved in this case to be of value alike to the public and the company.

PUBLIC MASTERS AND MEDICAL SERVANTS.

State departments and local authorities have recently given several indications of the scale of remuneration which they consider adequate for medical services, and it cannot, we fear, be said that they justify any sanguine hope that public authorities will be any more generous paymasters in the future than they have been in the past. It may be said that in Salford (p. 1250) and in Wales (p. 1199) the paymasters are boards of guardians and that boards of guardians are beyond hope. But we now have a metropolitan municipality like Wandsworth offering absurdly inadequate terms to protect itself against imposition by malingerers (p. 1256); a district council like Barry (p. 1188) rejecting a scheme for officering the local municipal hospital proposed by the British Medical Association, solely on the ground that the scheme laid it down that medical men should be paid for services rendered to a rate-supported institution; and, finally, a great public department like the Post Office, the only State department which makes money for the public exchequer, seeking to impose on its medical officers fresh duties either without added remuneration, or in return for fees so inadequate as to be a reflection on the intelligence of one party or the other (pp. 1233 and 1251). It is worth noting that in two of the cases the medical services are required not in the interests of suffering individuals but purely as a matter of actuarial business to guard the State or the local authority from malingering or fraud. The most temperate protests are met by State departments and municipalities alike by what practically amounts to the answer, "Take it or leave it; if you don't take it we "shall very soon find other doctors who will." It is disagreeable and somewhat unfortunate that difficulties which arise between the medical profession and the State or local authorities should so often turn on questions of money. We are told that we are a noble and generous profession, existing for the good of mankind, and that we endanger our reputation for nobility of character and generosity of action by insisting on higher fees and salaries than are offered. But this is not common sense. The members of the medical profession have to earn their living like other folks, and while they never fail to respond to the call of charity, they are not only justified in rejecting, but as good citizens bound to repel, proposals which are contrary to sound economic principles. It would seem sometimes as though public authorities acted on the assumption that medicine was already endowed by the State, and its practitioners in receipt of retaining salaries to which it was only necessary to add some trifling honorarium when new duties were imposed. The truth, of course, is that, save in the cause of charity, medical men are entitled to claim the full value of the services they render. Business men may consider it good business to set as low a pecuniary value on these services as they think will be accepted, trusting

to competition to keep the price down and the quality up. But there is a limit to legitimate competition; either the quality will decline or the worker will not receive a living wage. The limit has been reached and is frequently overpassed in the dealings of public authorities with the medical profession. The only effectual remedy for this state of things is combination and union within the profession, and this can be attained only through the British Medical Association, which has the will and possesses the necessary machinery.

CHRISTIAN SCIENCE AND SPIRITUAL HEALING.

AT the recent Church Congress an important address on Christian Science was delivered by Mr. Stephen Paget. He said that if the testimonials of those who had been healed by Christian Science of smoking, drinking, and the drug habit, were studied, the word "hypnotism" would be found stamped on every page of the evidence. Mr. Paget went on to quote Mrs. Eddy as saying that she has well-authenticated records "of "the cure of dislocated joints and spinal vertebrae. "Shortened limbs have been elongated, cicatrized "joints have been made supple, and carious bones "have been restored to healthy conditions. I have "restored what is called the lost substance of lungs. "I healed malignant tubercular diphtheria (*sic*). "I healed a cancer that had so eaten the flesh "of the neck as to expose the jugular vein, so "that it stood out like a cord." It is on such false miracles, he said, that Christian Science has founded and built her church. Christian Science does not publish her failures. Mr. Paget insisted that in London the Society of Emmanuel was under the shadow of Christian Science. It has published the case of a man who was healed, instantaneously, "in "the last stage, apparently, of consumption in the "lower part of the body"—a disease as mythical as Mrs. Eddy's malignant tubercular diphtheria; and the case of a man who was healed, by laying-on of hands and anointing, "after one lung had sloughed "away, and the other had half gone," and he is now "in perfect health, with two good sound lungs." One or two of these reported miracles have been investigated, with the result which might be expected. Nothing, Mr. Paget added, had happened yet in spiritual healing which had not its counterpart in mesmerism, treatment by suggestion, or commonplace medical attendance. It will be seen that Mr. Paget, like Gregory (in *Romeo and Juliet*) has a swashing blow. Naturally, the official defenders of Christian Science are up in arms. But that is a proof that they are hard hit. Dr. Johnson thought one of his pamphlets had been a failure because he had not been sufficiently attacked about it. Judged by this test, Mr. Paget has every reason to congratulate himself on the success of his plain speaking.

NEW LABORATORIES AT THE LONDON HOSPITAL.

ON Friday, October 15th, three new laboratories for physics, chemistry, and physiology, at the London Hospital Medical College, were formally opened by Professor Osler. The laboratories afford accommodation for about 120 students, and are well arranged, well lighted, and well equipped. Professor Osler said he had much pleasure in opening these laboratories, as it was in the laboratory that the foundation stone of medical knowledge must be laid. It was said by some that too much time was given by medical students to laboratory work. Professor Osler for his part thought more time should be spent in that way. It was in the laboratory that the student got the training in scientific methods of investigation which he should afterwards carry to the wards. He thought each student should do some piece of original research, and should work without the fear of examinations before him. This led him to speak of the hard case of the medical students of London, only a small percentage of whom could get a university degree. It was a scandalous injustice that a good honest examination, such as that of the Conjoint Board, did not entitle them to a good honest M.D. The fact that only some 5 or 6 per cent. of London students got the M.D. degree showed that there was something rotten in the state of Denmark. The London University, the hospitals, and the Conjoint Board had all failed in this point, and the students themselves should now take the matter in hand. They were a very powerful body, and should combine to get what they wanted and what they deserved. If they did combine for this purpose, they could get it within a year or two. The Vice-Chancellor of the University of London, who also spoke, said he had had occasion to look up the archives of the university. There was a room full of documents of various kinds, all labelled "Medical Grievances"; in it was written, "All hope abandon ye who enter here." He pointed out that there were 400 teachers of medicine belonging to the Faculty of London, while one-fourth of the Senate was composed of members of the medical profession. Considering that it was now nine years since the university had been reconstituted, and that during that time no definite proposals had been put before the Senate by the Medical Faculty, he thought they had got somewhere near the quarter where the blame for the state of things complained of by Professor Osler really lay. He agreed with the Professor's advice to the students to organize. Mr. Sydney Holland proposed a vote of thanks to Professor Osler, who afterwards delivered the Schorstein Lecture on Syphilis and Aneurysm before a crowded audience in the library. The full text of that lecture will be published in the BRITISH MEDICAL JOURNAL.

INSANITY AND CRIME.

AT a meeting of the Prussian Association for Political Instruction last January, Professor Siemerling of Kiel read a paper on insanity and crime with particular reference to the clauses in the German penal code relating to irresponsibility in accused persons. This paper, which has since been published separately,[1] deals especially with doubtful or "borderland" cases. It may be recalled here that Art. 81 of the German *Strafprozessordnung*, or rules of criminal procedure, permits of the remand to an asylum for mental observation of any accused person whose mental state is doubtful. Professor Siemerling has had a wide experience of such cases, and in his paper he was mainly concerned with these cases and detailed the evidences of mental defect or disorder warranting expert decision as to the responsibility or irresponsibility of the person accused. To avoid misunderstanding it should be mentioned that in Germany, contrary to British practice, this is a question for the mental expert. In the great majority of the 132 cases referred to the clinic at Kiel for this purpose during the last seven years, the form of mental disease, Professor Siemerling says, was congenital or acquired mental weakness. In discussing the effect of imprisonment on such cases, whilst stating that a form of mental disease peculiar to imprisonment does not exist, Professor Siemerling affirms that imprisonment, in weak-minded persons who have at the same time a tendency to simulation, gives a definite stamp to

[1] *Geisteskrankheit und Verbrechen.* By Geh. Med.-Rat. Professor Siemerling. Berlin: August Hirschwald. 1909. (Pp. 28, 80 Pf.)

the form and course of the symptoms. The type is so common that the term "imprisonment psychoses" has come into use. The first signs of the disorder, he says, often conceal themselves behind an attack of violent and destructive excitement, and the question arises whether this attack is merely a reaction against the hardships of imprisonment or the earliest signal of mental disorder. For the settlement of this question Professor Siemerling proceeds to outline the different groups of symptoms most commonly met with in prison psychoses and to refer them to their proper categories, whether pertaining to masked epilepsy, hysteria, chronic alcoholism, paranoia, or simulation. The question of simulation in these cases is, of course, of the utmost importance, and its solution often attended by the greatest difficulty. As Professor Siemerling points out, imprisonment tends to make people tricky. He has seen every form of insanity simulated, sometimes after careful study of the behaviour of insane people by the simulators, and he therefore does not share the growing opinion that the simulation of insanity is in itself significant of mental defect or disorder. It is astonishing, he says, how quickly the symptoms of imbecility or dementia disappear when the subject has been freed from punishment and committed to an asylum. Doubtless this is so, but it is also a fact—though Professor Siemerling does not mention it—that the prison records of every country can show numbers of cases in which prisoners have been sent from prisons to asylums as insane; have made surprisingly quick recoveries in the asylums, where they have been considered, mainly on this account, to be probably pure malingerers; and have yet fallen into pronounced and incurable insanity, though only, it may be, many years afterwards. The whole question bristles with difficulties, but the evidence seems to show that the great majority of simulators of insanity in prisons have subsequently to be certified as insane. Of an excellence which one would expect from an authority of such eminence is Professor Siemerling's discussion from the forensic point of view of paranoia quaerulans. He considers the subjects of this disorder—apart from weak-minded querulants—to be insane in the legal sense only when they manifest progressive changes of the whole personality, continually heightened emotional excitability, one-sided views of their personal legal relations, and absolute incorrigibility as to their ideas of personal importance or fancied wrongs and persecutions. Lastly, Professor Siemerling doubts whether the legal recognition of "diminished responsibility," which is at present being pressed for, would tend to remove present difficulties, and maintains firmly that "responsibility" and "irresponsibility" are sufficient to cover all cases.

THE WEST AFRICAN MEDICAL STAFF.

IN accordance with the recommendations of the recent Departmental Committee on the West African Medical Staff, the Secretary of State for the Colonies has appointed the following gentlemen to be an Advisory Committee on medical and sanitary questions connected with the British Colonies and Protectorates in Tropical Africa: Mr. H. J. Read, C.M.G., of the Colonial Office (Chairman); Sir Patrick Manson, K.C.M.G., F.R.S.; Sir Rubert Boyce, F.R.S.; Mr. C. Strachey, of the Colonial Office; Dr. W. T. Prout, C.M.G., late Principal Medical Officer, Sierre Leone; Dr. Theodore Thomson; Professor W. J. Simpson, C.M.G., of King's College, London; and Dr. J. K. Fowler, Senior Physician to Middlesex Hospital, and a member of the late Departmental Committee. The Secretary of the Committee is Mr. A. Fiddian, of the Colonial Office. The Committee thus consists of eight members, of whom only two are directly connected with the Colonial Office, one indirectly connected, one an officer of another Government department, and four entirely independent representatives of the medical profession; men, moreover, whose personality will in itself go far towards securing the confidence of the West African Medical Staff in the Committee. The constitution of this body may therefore be regarded as not less satisfactory than the decision to create it. It may be added that in the latest edition of the pamphlet issued by the Colonial Office for the information of candidates for the West African Medical Staff there is a paragraph stating that the Secretary of State has definitely accepted the recommendation of the Departmental Committee that officers in the initial grade who have served five years and who have undergone a special course of training shall be put on a new scale of pay should it be impossible to promote them forthwith to the grade of senior medical officers. The new scale rises from £500 to £600 by annual increments of £25. It is also stated that certain sanitary appointments will be created with salaries of £600, rising to £700 or more. The Colonial Office has, therefore, now acted on two important recommendations of the Departmental Committee, and if it falls in with the views of that Committee on the points on which it has reserved its decision until after the receipt of an expression of views from governors on the coast, the outlook for the West African Medical Staff and its efficiency may be regarded as entirely promising.

DENTISTS AND ANAESTHETICS.

SIR VICTOR HORSLEY distributed the prizes to the successful students of the London School of Dental Surgery at the *conversazione* of the Royal Dental Hospital held at the Prince's Hall, Piccadilly, on October 20th. In the course of an address to the students, after referring to the national work rendered by the Royal Dental Hospital in regard to the care of the teeth of children, Sir Victor Horsley described how the British Medical Association, working with the British Dental Association, was now putting forward a bill for the amendment of the Medical and Dental Acts which was intended to meet the wishes of both professions. The one-portal system was an important reform, but the opposition of those archaic bodies which existed by charging fees to those who sought to qualify themselves within their walls would have to be faced. Turning then to the subject of anaesthesia, Sir Victor Horsley said that one of the licensing bodies had made instruction in giving the administration of anaesthetics an essential part of the dental curriculum. To meet that demand the Royal Dental Hospital had provided a complete system of education in anaesthetics. The subject really was much wider than the mere demand of one licensing body. It was known to many that a Home Office Committee at the present moment was considering this question of the administration of anaesthetics, and seemed almost inclined to believe that it was capable of saying who might and who might not administer anaesthetics. That Committee was considering the matter, because a bill had been introduced into the House of Commons which would limit the administration of anaesthetics to the medical profession—that is to say, the members of the dental profession were to be excluded from the work. That was a matter of vital importance to all concerned. Sir Victor Horsley then described how when he was examined before the Home Office Committee on anaesthesia he was asked

if he considered a Licentiate in Dental Surgery a qualified man. His reply to that was, "Yes." The next question he was asked was, What was the Licentiate qualified for? To this Sir Victor replied dentistry; inasmuch as dentistry could not be carried on without anaesthesia, then it followed that a dentist must be qualified as an anaesthetist. Years ago, Sir Victor said, he had moved in the General Medical Council that instruction in anaesthetics should form a part of the necessary education of every man registered under the Medical or Dental Acts. His efforts were then absolutely fruitless, but the question was now being brought to the front again. A further question had to be settled, namely, the kind of anaesthetic employed; in a dental hospital it was not possible to make provision for the after-treatment of patients recovering from general anaesthesia, but the dental schools could secure at neighbouring hospitals instruction in general anaesthetics, such as ether and chloroform, in the same manner as instruction would be provided in the giving of nitrous oxide. It followed, in Sir Victor Horsley's opinion, that a dentist holding a registrable qualification was a man who was qualified to give an anaesthetic. Perhaps more might be said of the dangers and difficulties that might arise in the course of the administration of an anaesthetic, but he belonged to a school in which it had been demonstrated again and again that the dangers of certain general anaesthetics arose from methods of administration almost entirely. As soon as chloroform was given by dose and not by haphazard open methods then practical safety would be attained, and that was all that Government could demand. Sir Victor said that he regarded the future licentiate of dental surgery as a qualified man practising dentistry, and, when, necessary, giving anaesthetics. Mr. W. H. Dolamore, the Dean of the School, said that in order to fulfil the requirements of the Royal College of Surgeons for the teaching of anaesthetics the managing and medical committees had asked Dr. Dudley Buxton to fill the post of Lecturer, and he had agreed to do so. Each student, after attending these lectures, would receive individual instruction from one or other of the anaesthetists to the school in the administration of nitrous oxide. Although the committee was confident that good would come from this more systematic method of instruction, still it was claimed that instruction had been given well and properly in the past. The Dean then reminded those present that the Royal Dental Hospital was the home of nitrous oxide anaesthesia in this country; the gas was first used by a dentist for anaesthetic purposes and was introduced into the Royal Dental Hospital so long ago as 1868. In that year a dentist named Evans of Paris gave £100 to the hospital to test the value of this gas as an anaesthetic agent to enable the poor of London to have the benefit of its use. Dr. Dudley Buxton, in moving the vote of thanks to Sir Victor Horsley for his address, spoke of the responsible work carried on by the dental profession. After the prizes had been distributed, the numerous company present inspected the pictures of the Royal Institute Galleries, and attended a lecture on "Caricature In and Out of Parliament," by Mr. E. T. Reed.

COMMERCIAL PHILANTHROPY.

THE foundation stone of a factory at which radium is to be produced was publicly laid in Limehouse on Saturday, October 16th, the ceremony being performed by Lady Ramsay. In the course of various speeches it was indicated that the factory will be ready for work within a year, that the radium will be produced from the heaps of pitchblend accumulated near old copper mines in Cornwall, and that the separation of the radium from the ore will only occupy—thanks to a new and secret process which has been elaborated by Sir William Ramsay—some seven or eight weeks instead of eighteen months as at present. Throughout the process Sir William Ramsay's supervision will be necessary, and it is for that reason that the factory is to be established in London instead of in Cornwall. The new undertaking is the joint enterprise of the St. Ives Consolidated Mines and the British Radium Corporation, Limited, and—for the information of the shareholders, no doubt—a good deal was said as to the demand for radium and the gigantic prices which can be obtained for it. When first produced radium chlorides cost 8s. a milligram, but the price now is £18 a milligram, or over £500,000 an ounce. It might have been added that merely hiring out, not selling radium, represents an even more stupendous profit; or, in other words, that those who, in hope of being able to alleviate suffering, borrow radium salts, have to pay sums which represent a very high percentage on the purchase price. It was possibly considered, however, that this statement might prove disturbing even to a strictly commercially-minded audience. The ceremony included a vote of thanks to Sir William Ramsay, who in response said that what had prompted him to attempt to produce radium on a wider scale than hitherto was its scientific and medical interest. Another fact stated during the meeting was that the directors of the undertaking intended to be patriotic, and to supply this country and the Colonies—the whole British Empire—before they supplied foreign countries. In a case of this sort it was only just to be selfish. The Austrian and German Governments did not allow radium to be exported, and England should look after itself too. It was something like protection, but, after all, "we have got the radium, we want it, and why should "we not cure our own sick before sending it to "other countries." These words, which brought the meeting to a close, were loudly cheered, the audience being apparently either stirred by the nobility of the sentiment expressed or stimulated by the champagne luncheon which formed part of the ceremony. In either case, it is satisfactory to feel certain that the shareholders will not have their pockets lightened by the policy in question, for the British Empire is large, and the number of persons whom radium is presumed to be able to benefit is enormous. On the other hand, it would have been more satisfactory to have heard that the policy of the company included an intention to bring down the price and the hiring cost of radium to a reasonable sum.

APPENDICITIS AND HELMINTHIASIS.

THREE years ago we had occasion to remark that existing evidence was "not enough to justify any "sweeping generalizations to the effect that parasitic "worms are either the most important or the most "common cause of" appendicitis.[1] Since then numerous observations of the presence of worms in diseased appendices have been published in the BRITISH MEDICAL JOURNAL and elsewhere. Guiart's monograph on "Les vers intestinaux"[2] in the *Nouveau traité de médecine*, in which some forty-five different worms known to inhabit the intestinal canal of man are described, has come to reinforce the opinion of Blanchard that lesions of the intestinal mucosa due to worms are responsible directly, if not exclusively, for inflammatory disorders of the appendix, and that a dose of santonin is a satisfactory

[1] BRITISH MEDICAL JOURNAL, December 1st, 1906, p. 1595.
[2] Maladies de l'intestin, Fasiculus xvii of *Nouveau traité de médecine*, Gilbert et Thoinot, p. 323-439.

substitute for a surgeon. Weinberg,[3] who described cases of appendicitis in anthropoids, noted the presence of threadworms in the diseased organ, and he had previously[4] demonstrated the importance of the little ulcers surrounding the spots at which the heads of tapeworms are imbedded, as portals of entry for the typhoid bacillus. More recently Shipley[5] has subscribed to the view that worms play a serious rôle in the induction of appendicitis and other intestinal lesions in man. He was led thereto primarily by an investigation of grouse disease, in the course of which methods were devised for the detection of worms invisible to the unaided eye resulting in the discovery of at least one cestode and one nematode hitherto unknown in the grouse. After referring to Weinberg's demonstration of pathogenic micro-organisms in the contents of the alimentary canal of a nematode constantly associated with wasting disease in the horse, Shipley goes on to review the evidence for causal connexion between intestinal parasites and mural lesions in man. He is satisfied that *Oxyurides* can traverse the wall of the alimentary canal, and that they invade the mucosa with ease. The same is true of *Ascaris lumbricoides*, and so far as the mucosal lesion is concerned, of *Tricocephalus trichiurus* or *dispar*. He appears to be uncertain whether a definite ulceration of the mucosa is necessary to admit the entrance of micro-organisms, or whether mere penetration of the lining membrane by the hooklets of the worm is sufficient; but he does not lose sight, as do some French authors, of the purely preliminary rôle of the worms. He might, indeed, have strengthened his case by a reference to the work of Lorrain Smith and Tennant on the enormous increase of the bacterial content of the intestine in the immediate vicinity of a worm. On the whole, we think there is no reason to recede from the position indicated in the opening paragraph, but we agree with Mr. Shipley that whilst the practice of hygiene has materially lessened the incidence of cestodal infection, "as regards other entozoa, whose "entrance into the body is less easily controlled," we do not "keep the inside of our digestive system as "clean as our ancestors kept theirs," and that we might with advantage emulate our Continental *confrères* in the attention they pay to a branch of study somewhat crowded out of late by the demands of bacterial parasites.

THE MULTIPLICATION OF SPIROCHAETES.

IN a paper communicated recently to the Royal Society by Professor Nuttall, Dr. H. B. Fantham and Miss Annie Porter point out that the observation of the modes of division of *Spirochaeta recurrentis* and *S. duttoni* in the living organisms is difficult, and express the opinion that too much reliance has been placed on the examination of fixed and stained preparations, to the exclusion of evidence which might have been obtained from the living organisms in fresh blood. From observations on living spirochaetes they find that both longitudinal and transverse divisions occur in *S. recurrentis*, *S. duttoni*, *S. anodontae*, and *S. balbianii*. Longitudinal division of *S. recurrentis* and *S. duttoni* is best seen when the spirochaetes in the blood are few. This is the case at the onset of infection and at its close. In longitudinal division, rapid waves pass down the body of the spirochaete. A split then occurs at one end and gradually widens; waves travel down each of the diverging daughter forms, which ultimately lie at an angle of 180 degrees with one another. The daughter spirochaetes then separate. Organisms about to divide longitudinally are slightly stouter than the others. Transverse division, which also occurs, is initiated by the appearance of waves passing from both ends towards the centre of the organism, which acts as a node; these waves meet and die out, and return waves pass rapidly from the centre towards each end. These processes are repeated many times, the frequency of the waves increasing and the nodal region becoming thinner. Finally, after a succession of very rapid waves, division occurs at the node, and two complete daughter organisms result. There is a periodicity in the direction of the division of *S. recurrentis* and *S. duttoni*. At the onset of the infection longitudinal division occurs. This is followed by transverse division of the spirochaetes when the infection is at its height, while, with the diminution in numbers of the parasite as the infection draws to an end, there is a reappearance of longitudinal division; but both forms of division may occur at the same time. The observations were made on the peripheral blood of the host.

[3] BRITISH MEDICAL JOURNAL, December 19th, 1908, p. 1831.
[4] *Comptes rend. soc. biol.*, Paris, 1906, p. 648.
[5] *Parasitology*, vol. i, No. 4, December, 1908.

THE POWER OF LITTLE THINGS.

THE Association of Women Pharmacists held its fifth annual public meeting on October 9th, the special feature of the evening being the delivery of an address by Dr. May Thorne, who sought illustrations of the power of little things largely from circumstances in pathology and in the history of medicine. Among other points mentioned by her was the difference created in the treatment of phthisis by the recognition of such a seemingly small factor as fresh air and a dust-free atmosphere. Speaking of the spread of plague by ratborne fleas, she suggested that it was perhaps because cats were found to keep away plague that they came to be worshipped in Egypt in ancient times. The history of small-pox was quoted as affording another example. *Evelyn's Diary* for the year 1684-5, and the advertisements in newspapers of the seventeenth and eighteenth centuries, showed how exceedingly prevalent small-pox was in those days, and the great change which had since taken place owed its origin to a trifling remark made to Jenner, when a medical student, by a dairymaid, "I shall not have the small-pox because I have had the cow-pox." Miss Thorne derived other examples from chemistry, showing that by the addition of a molecule the whole character of a substance might be changed. She concluded her address by urging students never to despise the day of small things, quoting the lines—

> Say not that this is great, and that is small;
> Each task may hold your fate—fulfil them all.

DIPLOPIA AND COLOUR VISION.

REMY (*Recueil d'ophtalm.*, July, 1909) made a communication on this subject at the Naples Congress. Attention was drawn to the subject owing to a servant inverting the order of the numbers in making up her household accounts—for example, 47 was written as 74, and so on. This peculiar anomaly is easily explained as the result of a diplopia. It does not matter whether the diplopia is homonymous or crossed; provided the figures are duplicated without overlapping, and that the outer ones are suppressed, the effect of inversion is produced, but it is not detected by the diploscope, as each letter is seen by one eye only. Thus the word KOLA may be read as KLOA, because one eye sees K O L A and the other K O L A, which combine to form KLOA. It is obvious that coloured lights placed side by side may be similarly thought to be in the opposite order to that which they in reality occupy if there is diplopia of sufficient degree for complete separation of the two images. Thus it is easy to mistake signals in a case of this

sort, and while this may account for accidents, the writer does not refer to any cases where it has actually occurred. Where two coloured signals are placed side by side a lateral diplopia might only just suffice to produce three images, two being superimposed—a green and red, for example. One cannot predict what the diplopic individual would see: the middle compound image might give rise to a single green or red impression, whichever was the dominant colour, or a dirty white might be produced from fusion of complementary colours. If the diplopia is more exaggerated, four colours will be produced, with suppression of the two outer ones and apparent inversion. By placing one vertically above the other liability to confusion would be reduced to a minimum, as it could then only occur with a double diplopia—namely, in the vertical and horizontal meridians, a most rare combination.

THE Liston Victoria Jubilee prize of the value of £100, which is awarded every fourth year by the Council of the Royal College of Surgeons of Edinburgh to the Fellow or Licentiate of the college who has done the greatest benefit to practical surgery during the period since the last award, has been adjudged to Mr. Robert Jones of Liverpool. The presentation was made on October 19th at the first meeting of the college in its new hall.

Medical Notes in Parliament.

London University (Medical Degrees).—Sir William Collins asked the Prime Minister whether he had received any communications from or on behalf of the medical schools of London in regard to the standard of the medical examinations for degrees of London University; and whether he would state the nature of such communications, and what action, if any, he proposed to take in regard to them. The Prime Minister said that he had received communications from the delegates of the London medical schools and other bodies of the character referred to, and he had forwarded them to the President of the Royal Commission on the London University.

Feeding Suffragettes in Prison.—On Wednesday Mr. Percy Alden asked the Home Secretary a question, of which he had given private notice, with regard to the treatment of suffragettes in Newcastle Prison, and especially as to Miss Robinson. He wished to know whether they were being fed by force. Mr. Gladstone stated that only three of the seven suffragette prisoners in Newcastle were being fed by the tube. The others were taking their food from the officers without active resistance. Miss Robinson was released on Tuesday morning on a medical certificate. Answering a further question by Mr. Boulton, Mr. Gladstone said four suffragettes were released solely on medical grounds. They were either suffering from heart disease or were in a feeble state of health.

Post Office (Tuberculosis).—Mr. G. N. Barnes asked the Prime Minister if he was aware that during the past ten years 3,286 men had been discharged from the army, 2,673 from the navy, and 1,057 men and women from the Post Office, in all 7,016 persons, suffering from tuberculosis; that no provision had been made by the Government for the care of such invalids or the prevention of the spread of the disease; and whether, in view of the efforts made by the Government, in the shape of legislation and other measures to check the ravages of this disease, he was prepared to take action with a view of making provision for the proper treatment of all such cases in the future. Mr. Hobhouse said that he understood that the figures stated in the first part of the question were correct. In answer to the remainder of the question, he had nothing to add to the answer given by the Prime Minister on November 11th, 1908.

Vaccination (Cost).—Sir Maurice Levy asked the President of the Local Government Board whether the Vaccination Order of 1907, which came into force in October, 1907, had had the effect of reducing the total cost of vaccination, comparing the cost per vaccination before and after the Order came into force; and, if so, what the reduction had been. Mr. Burns replied that there could be no doubt that the effect of the Order had been to reduce the cost of vaccination, but it would not be practicable to give the precise particulars desired.

The Health Resorts and Watering Places (Ireland) Bill, which was substituted for the Health Resorts Bill, passed all its stages easily in the House of Commons and has now gone to the Lords for consideration. It allows local authorities to advertise health resorts at an expenditure of not more than the proceeds of a penny rate. Some opposition threatened in the Upper Chamber was deprecated on account of the unanimous support the bill received in the Commons. The second reading was obtained on Tuesday last on the motion of Lord Marchamley. Lord Onslow opposed, but eventually withdrew his opposition.

Feeding School Children (Christmas Vacation).—Mr. W. Thorne asked the President of the Board of Education if had seen the report of the Gorton Education Committee under the Provision of Meals Act, which stated that, out of 181 children examined before and after the Midsummer vacation, 106 lost 275 lb. in weight, or an average of 2.594 lb.; and whether he was prepared to recommend to the various school care committees under the Provision of Meals Act that necessitous children be fed during the Christmas vacation. Mr. Trevelyan said that the answer to the first part of the question was in the negative. So far as the second part of the question was concerned, it would appear from answers recently given by the President of the Local Government Board to questions that some doubt existed as to the legality of the expenditure of money by a local education authority under Section 3 of the Education (Provision of Meals) Act, 1906, in feeding school children during the holidays. Apart from the legal aspect of the case, the Board would not consider it desirable to make recommendations as to the action to be taken under the Act by local education authorities or their committees, as it appeared to them that the question was essentially one to be determined locally.

Medical College, Madras (Military Assistant Surgeons).—Mr. Hazleton asked the Under-Secretary of State for India, on Monday, whether the senior assistant professor at the Medical College, Madras, and the senior assistant surgeon at the General Hospital, Madras, were Eurasian military assistant surgeons lent to the civil medical department; whether he could state their medical qualifications and salaries, with the salaries of the civil assistant surgeons under them; and whether it was proposed to open these posts to well-qualified Indians. The Master of Elibank answered that it appeared from the Madras Civil List that the two officers mentioned were military assistant surgeons; the Secretary of State had no information as to whether they were Eurasians or as to their medical qualifications; their total emoluments were respectively Rs. 575 and Rs. 255 a month; the civil assistant surgeons in the medical college, who held appointments of equal rank, drew either Rs. 250 or Rs. 200 a month. As was stated in reply to a question on March 2nd, the Secretary of State had no reason to suppose that duly qualified Indian assistant surgeons would not be held eligible for these posts in the event of vacancies occurring.

The Housing and Town Planning Bill.—The Prime Minister stated on Wednesday that if the report stage of the Finance Bill was finished by Thursday in next week, the following Friday would be given to the consideration of the Lords' amendments of the Housing and Town Planning Bill.

Scotland.

[FROM OUR SPECIAL CORRESPONDENTS.]

THE EDINBURGH MEDICAL SCHOOL.

THE Edinburgh Pathological Club, which consists, it is stated, of persons all more or less actively engaged in teaching, has recently issued through the *Edinburgh Medical Journal* a report on the Edinburgh Medical School, its curriculum, and its efficiency. The report states that, in consequence of the co-ordination existing between the university and the extra-mural school, it was found necessary to consider the situation only from the standpoint of the university.

The report points out that whereas the regulations of the General Medical Council impose five years of study, the last three months of the Edinburgh curriculum are so occupied by examinations as to be unavailable for useful work, and therefore recommends that all students should enter in the summer session, and that the curriculum should be extended to five years and one summer session. It is further recommended that this sixth summer term should commence in the middle of April and the examinations begin about the end of June.

The report examines in detail the arrangements now existing for teaching and examination in each of the subjects of the medical curriculum, and recommends certain alterations. With regard to examinations, it is pointed out that during recent years there has been a tendency in Edinburgh, as elsewhere, to introduce the principle of allowing a student to pass a subject of professional examination whenever by attendance at the prescribed course he is qualified to do so. Upon this the following comments are made:

> This movement is animated by the best intentions, and has for its aim the lightening of the student's work. The working of the plan has, in our opinion, not been attended with success, and has even had an effect opposite to what was desired. Instead of spreading the student's work more equally over the period of his curriculum, it places on him a constant incubus in the form of an imminent examination, on success in which his career at the university depends; and further, the educative value of periods of immunity from academic pressure is lost. It is manifestly impossible by any arrangement of a curriculum to ensure that one subject shall be finished before another is begun; hence the constant effect is that the student, being only human, concentrates the whole of his efforts on an often unnecessary amount of preparation for the next subject of examination, meanwhile practically wholly neglecting the other subjects which he should be studying at the same time. We have convincing evidence from both teachers and students that this is what is actually happening in consequence of the splitting up of the final examination under the recent ordinance.

The report, while raising no objection to this system in its application to the subjects of the first professional examination, expresses the opinion that when the heavier subjects of the curriculum are approached the grouping for examination purposes disturbs synchronous work for other subjects less, and makes for the educative efficiency of the whole curriculum. It suggests that anatomy and physiology should be passed at the same time at the end of the third summer; that a third professional examination should be set up in pharmacology and elementary pathology, to be passed at the end of the third winter; a fourth professional examination dealing with medical jurisprudence and public health, to be passed at the end of the fifth summer; and a fifth final professional examination in medicine, surgery, midwifery and gynaecology, and advanced pathology and therapeutics, to be passed in the sixth summer. It is recommended that if a candidate fail at a professional examination he should have an opportunity of making a second attempt three months after his rejection, but that if he fails a second time he should pay the penalty by his curriculum being lengthened, two rejections indicating a want of aptitude, studiousness, or ability, demanding a more prolonged period of study than is necessary in the case of the average student. The report further expresses the opinion that many of the difficulties which arise in arranging for the later subjects of the curriculum would disappear if the student were required to follow a fixed curriculum, and accordingly puts forward the following skeleton time-table embodying the suggested alterations:

FIRST YEAR.

Summer Term.—First Summer.

Biology { 50 lectures. / 50 hours' practical work.
Physics { 50 lectures. / 50 hours' practical work.

Examination in Biology and Physics at end of Summer.

Winter.—First Term.

Examination in Biology and Physics for those who have failed in Summer.
Chemistry (Principles)—50 lectures.
Practical Chemistry—50 hours.
Junior Anatomy—50 lectures.
Practical Anatomy.

Winter.—Second Term.

Chemistry (Inorganic and Organic)—50 lectures.
Practical Chemistry—50 hours. (Including Inorganic Pharmacognosy.)
Demonstrations in *Regional Anatomy.*
Practical Anatomy.
Examination in Chemistry at end of Winter.

SECOND YEAR.

Summer Term.—Second Summer.

Organic Chemistry (including Organic Materia Medica).
Demonstrations and Practical Work, 75 hours.
Histology—Lecture-Demonstrations and Practical Work, 100 hours.
Practical Anatomy.
Practical Examination in Organic Chemistry at end of Summer.
Examination in Chemistry for those who have failed in April.

Winter.—First Term.

Examination in Organic Chemistry for those who have failed in July.
Physiology—50 lectures.
Experimental Physiology—2 hours twice weekly.
Practical Anatomy.

Second Term.

Physiology—30 lectures.
Physiological Chemistry—2 hours weekly.
Senior Anatomy—50 lectures.
Practical Anatomy.

THIRD YEAR.

Summer Term.—Third Summer.

Anatomy—Practical Demonstrations.
Physiology—Practical Demonstrations.
Examination in Anatomy and Physiology.

It was deemed necessary, in attempting to arrange for the correlation of work in the later subjects of the curriculum, to allocate definite hours to each subject.

Winter.—First Term.

Examination in Anatomy and Physiology for those who have failed in Summer.

9-10—*Junior Surgery.* — Lectures three days a week; Tutorials other three days.
*10-12—Tutorial Work in Surgical Wards; Clinique by Assistant Surgeon.
12-1—Ward Clinique by Surgeons, or Operations.
1-2—
2-3—*Pathology*—Lectures three days a week.
2-3—*Practical Pathology* } Class to meet in sections, each
3-4—*Practical Pathology* } thrice weekly.
4-5—*Pharmacology.*

Second Term.

9-10—*Surgery* as in First Term.
*10-12 } Surgical Ward Work as in First Term.
12-1 }
1-2—
2-3—*Pathology*—Lectures three days a week.
3-4 } *Practical Pathology*—Sections.
4-5 }
Examination in Elementary Pathology and Pharmacology.

FOURTH YEAR.

Summer Term.—Fourth Summer.

9-10—*Applied Anatomy.*
*10-12 } Surgical Ward Work as in two previous terms.
12-1 }
1-2—*Post-mortems.*
Practical Work in Pathological Department of Infirmary (in sections).
Examination in Elementary Pathology and Pharmacology for those who had failed in April.

* These hours during all three terms would be available for the students of each year attending out-patients. The total number of men in a year would be divided into sixths, and each sixth would take out-patients for half a term.

Winter.—First Term.

9-10—*Medicine*—Lectures three days a week.
Midwifery and Gynaecology—Lectures three days a week.
10-12—Tutorial Work in Medical Wards, case-taking, etc.
12-1—Clinique by Physician or Assistant Physician.
12-2.30—*Post-mortems.*

Winter.—Second Term.

9-10 { *Medicine*—Lectures, } as in previous
{ *Midwifery and Gynaecology*—Lectures, } term.
10-12—Tutorial Work in Medical Wards as before.
12-1—Clinique by Physician or Assistant Physician.
12-2.30—*Post mortems.*
4-5—*Therapeutics*—Lectures.

FIFTH YEAR.

Summer Term.—Fifth Summer.

8-9—*Public Health.*
9-10 { *Medicine*—Lectures, } as in previous
{ *Midwifery and Gynaecology*—Lectures, } terms.
10-12—*Special Subjects.*—Diseases of Children, Diseases of the Skin, Diseases of the Eye, Diseases of the Ear and Throat, Clinical Gynaecology. (Each to meet either on Mondays, Wednesdays, Fridays, or Tuesdays, Thursdays, Saturdays.)
Medical Out-patients in Sections.
10-12—Tutorial Work in Medical Wards.
12-1—Clinique by Physician or Assistant Physician.
12-2—*Post mortems.*
2-3—*Medical Jurisprudence.*
3-4—
4-5—*Advanced Pathology.*
Examination in Medical Jurisprudence and Public Health.

Winter.—First Term.

9-10—Lectures on *Regional Surgery* (three days a week).
9-10—*Medicine* (Special Courses if desired).
10-12—*Special Subjects* as in previous term; Medical Out-patients.
12-1—Senior Surgical Cliniques—three days a week. (Including Venereal Diseases.)
12-1—Senior Medical Cliniques—three days a week. (Including Out-patients.)
1-2—
2-5—*Dispensary*—Sections in *Fevers*, *Vaccination*, *Dispensing.*

Winter.—Second Term.

9-10—Lectures on *Regional Surgery* (three days a week).
9-10—*Medicine*, Special Courses if desired, as in previous term.
10-12—*Special Subjects* as in previous term; Medical Out-patients.
12-1—Senior Surgical and Medical Cliniques, as in previous term.
1-2—
2-3—*Mental Diseases.*
3-5—*Dispensary* (Sections in Fevers, etc., as in previous term).

Sixth Summer.

8-10—*Operative Surgery.*
10-2—Clinical Work.
Final Examination in Medicine, Surgery, Midwifery and Gynaecology, Clinical Medicine, Clinical Surgery, Clinical Gynaecology, Advanced Pathology, and Therapeutics.

NOTIFICATION OF PHTHISIS.

The Corporation of Glasgow took the important step last week of including phthisis pulmonalis among the diseases coming under the Infectious Disease (Notification) Act for the next three years. In taking this step it was guided by a very full and able memorandum presented by the Medical Officer of Health (Dr. A. K. Chalmers). After indicating the limited character of the infectivity of phthisis the memorandum went on to point out that the sanitary objective—the prevention of the spread of the disease to others—required the control primarily and always of the sputum, which included special care of feeding utensils which came into contact with the lips, destruction of the sputum, and the avoidance of the risk arising from uncontrolled coughing by which infectious particles may be projected into the atmosphere. The difficulty of meeting the last requirement, especially at night in the houses of the poor, was indicated. The opinion was expressed that the endeavour to remove or reduce the risk to the families of consumptives came within the functions of the local authority. It was pointed out that the value of the sanatorium as a factor in the repression of consumption would be misapprehended if it led to apathy in dealing with the sanitary conditions under which the disease so frequently occurred. The consumptive was not of necessity dangerous to his fellows, he became so only when intercourse with them was permitted under conditions calculated to produce susceptibility to infection. So far as such conditions were external and structural they were in the main insanitary, such as defective light, ventilation, and cleanliness, so that in any complete scheme for the prevention of consumption some visitation was necessary. The memorandum touched also upon the value of the sanatorium, and on the importance of tuberculous dispensaries and home supervision. In addition to adopting the recommendation that phthisis should be included among the notifiable diseases the Corporation resolved to open tuberculosis dispensaries in the eastern, western, and southern districts of the city, in addition to that at present conducted in the sanitary chambers. A nurse is to be attached to each dispensary for systematic visitation of the homes and families of the patients attending the dispensary, and a special medical officer is to be appointed to supervise this work. It is estimated that for the first year the notification fees will amount to £570, and in the two following years to about £200. The total cost of notification and dispensary scheme is estimated at £1,750 for the first year and £1,380 in the following years. Glasgow has thus given the lead to other Scottish towns. The question was before a recent meeting of the Dundee Town Council, when the recommendations of a subcommittee of the Public Health Committee—which included besides compulsory notification, isolation of advanced cases and negotiation with the sanatorium authorities for the acquisition of twenty beds in that institution—were rejected.

CHAIR OF SURGERY, ABERDEEN.

On October 16th the new professor of surgery, Dr. Marnoch, delivered his introductory lecture at the opening of the surgery class. There was a large attendance of members of the Senatus and University Court, and Professor Stephenson, who presided, introduced the new professor. After paying a graceful tribute to his predecessor, Professor Ogston, Professor Marnoch proceeded to discuss recent scientific work in connexion with cancer of the breast, particularly that of Handley. The permeation theory had a very real and practical bearing on the treatment of the disease, placing, as it did, the operation of cancer of the breast on a much more rational foundation. Since the introduction of the more extensive operation, a marked improvement had taken place in the results as regards ultimate cure. He thought still further improvement might confidently be expected, and did not believe that it would be limited to cases of breast cancer, for the permeation theory, although worked out on the mamma, was applicable to cancer generally. It was a great incentive, if such could be said to be needed, to early operation, for surgeons would now operate with much more confidence of completely eradicating the disease. The improvement in operative results in recent years was all the more remarkable in that cases came for treatment none too early. The main responsibility for delay, he believed, generally rested on the patients themselves. It was a matter of profound regret that, in the lay mind, cancer was regarded as synonymous with pain. Many a woman deluded herself into the belief that a growth on her breast was of little consequence, simply because it was not painful. He had often thought it a pity that the early phases of breast cancer were so devoid of pain. Were it otherwise, medical men would be consulted earlier. Much was done nowadays in instructing the general public in matters of public health, but surely something might also be done to dispel the ignorance of a disease which, year after year, claimed so many victims. It was from this direction that further improvement in operative results must be looked for. The sooner the public mind was disabused of the idea that cancer was at all stages a painful malady, and women could be induced to seek advice the moment their attention was drawn to a tumour or other abnormality in the breast, the more successful would

be the efforts of surgeons. It could not be too strongly insisted upon that cancer at its onset was a local disease, and was curable by complete excision.

Water Filtration in Edinburgh.

New mechanical filters for the Edinburgh water supply have been set up, the system adopted being that of Messrs. Bell Brothers, Ravensthorpe, Yorkshire. They are constructed of shells, 8 in. in diameter, made of mild steel, the bottom of the shells being fitted with strainers and piping set in concrete for collecting the water while filtering through the sand with which the shells are about three parts filled. Inside the filter are placed vertical hollow shafts, fitted with horizontal perforated arms so as to allow of jets of water being forced into the sand-beds when being washed. The beds are composed of silver sand, which is automatically graded when being washed. There are twelve filters, and each deals with from 6,000 to 10,000 gallons an hour. In the cleansing of the filter beds paddles are used to break up the bed and loosen the dirt, the paddles revolving at the rate of 80 ft. a minute. Capacious chambers for the storage of the filtered water, capable of storing about three-quarters of a million gallons of water, have been formed in the rear of the building containing the filters. The filters cost £5,000.

Western District Hospital, Haddington.

On October 4th a new pavilion and administration block for the treatment of infectious diseases was formally opened by the Marchioness of Tweeddale. Originally this hospital provided accommodation for 16 beds, and this has now been extended to 40. The cost per bed has been about £184. Dr. Leslie Mackenzie, medical member of the Local Government Board, stated that he had been familiar with the hospital for sixteen years, and considered it one of the most satisfactory institutions of its kind in Scotland. It was the second wooden hospital erected in Scotland, and he congratulated the County Council, the Western District Committee, and the local authorities associated with them on having spontaneously from time to time met the needs of the district. So far as East Lothian was concerned, the Local Government Board had no need to apply coercion.

Seaforth Sanatorium.

A year ago the sanatorium was described in these columns. The whole burden of building, equipping, and managing was borne by Mr. Stewart-Mackenzie of Seaforth. The first annual report has just been issued by Dr. MacLean, the superintendent. The purpose of the founder was to provide for the county of Ross the curative treatment of phthisis in its earlier stages, and admission to the sanatorium is by nomination, while treatment is free to all not in receipt of Poor Law relief. In the first year, despite the conditions as to the admission of cases in the incipient stages only, several patients were sent who were suffering from phthisis in an advanced form. With regard to these cases, Dr. MacLean says the founders are "reluctant to do that part of the work for the diseased which properly belongs to the body politic of the county, not to private munificence, but to public funds." The total number admitted during the first year was 31. There were 4 deaths.

Ancient Order of Foresters' Convalescent Home.

The Scottish Foresters' Convalescent Home Benevolent Society formally opened its new home at Kinbuck, near Dunblane, on October 16th. This is a praiseworthy effort to provide a home where invalid members can find rest for a period. There is accommodation for fifteen patients, and there is plenty of space available for additions at a future date, if such be found necessary. The ground floor contains a dining-room, a recreation-room, board-room, conservatory, kitchen, etc., while upstairs there is, as stated, accommodation for fifteen patients. The home stands in its own grounds, which are well laid out.

Northern Infirmary, Inverness.

New phthisis wards have been opened in connexion with the Northern Infirmary, intended for the treatment of incipient cases. These wards are separate from the main building, and have a verandah, where patients can have the advantage of open-air treatment.

Ireland.

[From Our Special Correspondents.]

The Royal College of Surgeons in Ireland.

At the prize distribution at the School of the Royal College of Surgeons in Ireland on October 15th, Mr. John Lentaigne, President of the College, before handing the awards to the successful students, delivered an address, in the course of which he remarked that the school was now entering a period of grave difficulty and danger. If those difficulties were merely the outcome of fair competition on the part of its rivals—that is to say, of greater industry and more successful work—the school, he said, would not complain, but would meet them, as in the past, by increasing its own efforts. Unhappily, the troubles were due to a very different cause. An Act of Parliament had completed the State endowment of every other medical school in Ireland, while their own was excluded absolutely from all Government favours. Medical education had become a business so difficult and financially unprofitable that it was right and proper that it should be assisted by the State when necessary, and the Royal College of Surgeons had never found fault with the endowment of other schools; but what it did protest against was the unfairness of absolutely ignoring the claims of a school which had done at least as good work as the others, and against which no fault had, or could have, been found in the past. The rival schools would now be free from all possibility of pecuniary embarrassment; they would be provided with abundant funds for the endowment of laboratories and classrooms; the salaries of their professors and lecturers would be paid for them; rich prizes would be offered to students, and, worst of all, they would be able to outbid and undersell the school of the Royal College of Surgeons by lowering the fees for lectures, degrees, and diplomas to such a point as must speedily starve and destroy the school of the College. The injustice and unfairness of the scheme were so patent that at first the Council of the College had no doubt that if it approached the Government it would only have to state its case in order to have its grievance remedied; it consequently asked for an endowment sufficient to enable it to continue its work in the face of the new and increased competition, the sum applied for being absolutely insignificant as compared with huge grants which were being voted for educational purposes in the new universities. The Prime Minister, however, though he paid a glowing tribute to the work which had been done by the College and the school, contented himself with an expression of belief that the school would not suffer from the new competition; if damage were proved to occur the Government might possibly reconsider the question, though he made no promise on the point. Nothing, therefore, had been achieved in the way of redressing the balance, and the outlook seemed most unpromising. Nevertheless, the College was determined to spare no effort to maintain the highest possible standard of efficiency in the school. During the past two months it had spent large sums out of its scanty funded capital in improving the school, and it would do everything in its power to maintain the unequal struggle as long as possible. It would also agitate to the best of its limited ability, and spread the story of the wrong which was being done far and wide, and on every possible occasion, in the hope that if not for the sake of justice, then for shame's sake, the Government might be induced to take action to save the school before it was utterly destroyed; or that that hope failing, the next Government might be persuaded to remedy the evil done by its predecessors

and render justice to an old, honourable and most useful institution. Mr. Lentaigne then distributed the prizes, the principal winners being: Mr. H. R. Tighe, who won the *Barker Anatomical Prize* (£26 5s.); Mr. J. S. Pegham, who won the special prize (£21) in the same subject; Mr. J. T. Duncan, to whom the *Carmichael Scholarship* (£15) was awarded; Mr. J. T. Duncan, winner of the Stoney Memorial gold medal in anatomy; and the gold and silver medallists in operative surgery, Miss I. R. Clarke and Mr. F. N. Harvey respectively.

Conjoint Cecilians.

At a meeting of the past and present students (conjoint) of the Catholic University Medical School held in the Gresham Hotel, Dublin, on October 9th, Dr. Adye-Curran presided, and the following resolution was proposed and passed unanimously;

> We, the past and present students of the Catholic University Medical School with non-university "qualifications," respectfully approach the governing body of the National University, and request that they will be good enough to take into consideration the position occupied by us at present, and kindly say what concessions they would feel disposed to grant in the event of our seeking a medical or dental degree.

All those interested in the question are cordially invited to communicate with the Secretary, "Conjoint Cecilians," Apothecaries' Hall, Dublin.

The Royal Victoria Hospital, Belfast.

On October 14th, the opening day of the winter session at the Royal Victoria Hospital, an address was delivered by Mr. Hanna, assistant surgeon to the eye, ear, and throat department. Dr. J. Walton Browne, senior surgeon and chairman of the medical council of the hospital, presided, and there was a large attendance of students. In the course of his remarks Mr. Hanna said that those who found pleasure in analytical records of human progress could find no more fascinating study than that of the historical side of medicine and hospital development. He was glad to see that in the curriculum laid down by the new university much had been abolished which was formerly considered a necessary part of a student's education, while on the other hand the study of children's diseases had been made compulsory. Medicine was essentially practical in its aims, and in its study there should be a spirit of inquiry and an endeavour to make observations which would stand experimental tests. Pathological teaching in Ireland was impeded by the difficulty experienced in obtaining permission to conduct necropsies, and the medical profession should unite to take some concerted action to minimize this drawback. He advocated the opening of one of the two vacant wards in the hospital as a children's ward, and had no doubt that the financial aid required would be forthcoming were the advantages of such a ward duly set forth.

Health of Belfast in 1908.

Dr. Bailie, Medical Superintendent Officer of Health, has issued his report for 1908 on the health of Belfast. It forms a very presentable volume of 200 pages, with a complete index of nearly six pages and a large number of charts, diagrams, and maps. Several subjects chosen at random were found with ease and rapidity from the index; pneumonia, however, does not appear. The report on the whole makes satisfactory reading, and engenders the feeling that a real attempt is being made to grapple with the enormously difficult problem of the health of the city.

The population is estimated at 380,344; there were 11,490 births, equal to a rate of 29.7 per 1,000, and 7,523 deaths, or a rate of 19.5. The infantile mortality was 147 per 1,000 births; the zymotic death-rate 1.8, and phthisis death-rate 2.3. This death-rate from all causes is the lowest ever recorded, and if the population were estimated on the English method, the figure would be 17.7. If we accept the latter rate as correct, we find that Belfast has rapidly risen in the Registrar-General's table of large cities. In a list of 82 it would be now some 18 from the bottom, and would be tabulated equal with Glasgow and Sunderland.

There is a very satisfactory improvement in respect of zymotic diseases. The total number of cases notified was 1,388, the lowest since the Notification Act came into force; it is 434 less than that of 1907, nearly half that of 1906 and 1903, and nearly a fourth of 1901, the year of the typhoid epidemic. The greatest fall is in typhoid fever and simple continued fever, but scarlet fever, diphtheria, and erysipelas are all low. It is scarcely to be hoped that such figures will be found in succeeding reports. An epidemic of scarlatina, such as occured in 1906, would disturb the level. Nearly all large towns in the United Kingdom showed similar exceptional good health during 1908; perhaps one may be forgiven for hoping that the large sums expended of late years on preventive medicine have had at last this desired result. In Table No. V, p. 14, the old anomaly of including relapsing fever in the list of notifiable diseases is still found, although no case has occurred in historic times, that recorded in 1905 being in all probability a mistake. Cerebro-spinal meningitis does not appear in this table, but it was notified 118 times, and 66 deaths occurred.

There are several points to which attention may be called. Pneumonia is one of the commonest terminal affections; it is then a mere mode of dying, and it is greatly to be feared that where death is due to some disagreeable disease, and pneumonia supervenes during the last few days, it appears as the cause of death; pneumonia is thus overrated, and measles, whooping-cough, alcoholism, phthisis, cancer, and other affections underrated. Again, the number of deaths due to measles, whooping-cough, and diarrhoea totalled 583; while the number from typhus, scarlet fever, and diphtheria was 47. It cannot be too strongly insisted on that the loss to city and to family from a death is equal, no matter what the cause. Can nothing be done in the matter of notification or other preventive measure to stop this sacrifice of young life? Dr. Bailie calls attention to this point under the heading of erysipelas; it has been noticed in these columns for many years.

There was one threatened epidemic of typhoid fever from milk supply; but with the experience of the past few years, energetic steps were at once taken, and the epidemic stayed. Dr. Bailie again makes complaint of the difficulty of getting the poorer class of patient to seek hospital treatment. Although a first-class fever hospital has been provided, many persist in nursing the invalid at home where accommodation is inadequate. The same experience holds in other cities. Some years ago the difficulty was to persuade patients in Liverpool to go to hospital; now they claim admission as a right, and 6,213 fever patients were treated within hospital walls. It has been suggested, and the suggestion is one which Dr. Bailie may well consider, that during the summer, when the Infectious Hospital is practically empty, the public should be invited to visit the place and see for themselves the buildings and arrangements.

Dr. Bailie makes official recognition of the valuable services of the municipal lady health visitors and of the Infantile Mortality Section of the Women's National Health Association.

To tuberculosis fifteen pages of the report are devoted; the annual mortality stood for some years at about 3.2; during the last three it has been 2.7, 2.5, and 2.3. This is very gratifying. Three bodies are engaged in dealing directly with the pulmonary form—the municipal authorities, the Tuberculosis Section of the Women's Health Association, and the Forster Green Hospital. Overlapping is threatened, and it would be somewhat more satisfactory if the measures to avoid triplication were more clearly enunciated. It is ill, however, to find fault with too much zeal in such a cause. Two nurses and one medical man are specially retained. The homes of consumptives are visited and disinfected when the patient goes to hospital or dies, and when a patient returns from hospital he is not lost sight of. Much literature is distributed. Dr. Bailie says that the death-rate in the city is raised by the country tuberculous who come into the town and die. This is contrary to the general opinion, and a study of the map of the Registrar-General, where the depth of

the shading shows the consumption mortality, rather supports the view that the towns are centres and infect the neighbouring districts; he does not substantiate his statement, except by advancing the record of 36 people from outside districts who entered the union as destitute and of other problematical cases.

The milk supply is carefully looked after; but considerable doubt arises when the statement is read that no tuberculous animals were found in the cowsheds, nor any tubercle bacilli found in the samples submitted to Professor Symmers. In Liverpool 204 cows showed suspicious signs of tubercle of the udder out of a total of 1,874 within the city, and 98 out of 3,766 in the country sending milk to Liverpool; out of 1,770 samples from the town 22 were tuberculous, and of 2,613 samples from the country 168 were tuberculous. These figures are for ten years. The Glasgow returns are 18 tuberculous out of 417 samples, or 4.3 per cent. The samples forwarded to Professor Symmers were much too few.

In the annual report of 1906 Dr. Bailie had an important and interesting note on alcoholism, but in 1907 he stated that he could get no data, and in the report for 1908 the subject is omitted altogether. Alcoholism, using the term in a broad sense, is a very notable factor in public and private hygiene, and Dr. Bailie must be given powers to obtain figures. The national schools have again received attention, and a list of valuable sanitary improvements are detailed. Dr. Bailie gives some account of the finances of the Public Health Department, which should be a valuable corrective to the wholesale reforms that some are inclined to advocate. A full examination of all details, with comparisons drawn from other cities, would require a volume. The accounts of the Purdysburn Fever Hospital are simple; their perusal suggests extravagance. There are 168 beds, and 583 cases were treated during the year; the total expenditare was £11,772 9s. 5d.; the salaries and wages amount to the large sum of £3,480 6s. 7d.—that is to say, each patient cost £6 in salaries and wages alone; the food for both patients and staff cost £1,652; if we deduct the sum of £3,848 17s. 10d., which comes under the heading Loans Fund, from the total, we have left £7,923 11s. 7d., so that nearly half of the real expenditure consists of salaries and wages. In the London Fever Hospital, dealing with 802 patients, the salaries and wages come to £3,847 out of a total ordinary expenditure of £12,715 in 1907; and in the Cork Street Fever Hospital, Dublin, dealing with 2,032 patients, we have salaries and wages amounting to £2,074, out of a total expenditure of £6,748. Of course it is not correct to compare infectious diseases hospitals with general hospitals, but the total salaries and wages of the Royal Victoria Hospital, Belfast, amount to £3,895 7s. 8d., out of a total expenditure of £14,068 8s. 7d. This institution during 1908 dealt with a total of 3,567 intern patients, 1,427 surgical operations, 198 deaths, and a large extern of 30,041. The grounds are not as large as at Purdysburn, but the Plenum system of ventilation requires skilled engineering attention; this system seems to be economical, as the cost of heating, lighting, ventilation, including cooking and laundry, was £1,753 0s. 5d., as against coal, coke, and firewood of the Purdysburn Hospital of £1,408 9s. 2d.; lighting does not seem to be charged for. The dietary charge is also high; in the Royal Victoria Hospital the dietary for patients, nurses, and staff (including a daily table of thirteen medical men) is £4,629; in the Purdysburn Hospital it is £1,652 18s. 5d. It is to be recommended that the hospital accounts should be made out on the uniform system of hospital accounts. Dr. Bailie has given us much for which thanks are due, but still more is demanded. Who is responsible for the expenditure of Purdysburn? It is not Dr. Bailie, nor Dr. Robb, the Visiting Medical Superintendent. No economy can be expected till some one individual is made responsible. It would be interesting to compare the statistics of the Belfast Poor Law Union Fever Hospital with excellent accommodation and under the same medical care.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

MANCHESTER AND DISTRICT.

COST OF HOSPITAL TREATMENT IN MANCHESTER.

THERE has recently been much criticism in Manchester of the cost to the rates of the Monsall Fever Hospital, and it was stated by a member of the City Council that the hospital cost the ratepayers £23,000 a year, and that each of the patients costs 33s. a week. On January 1st, 1908, the patients in the hospital numbered 323, and on December 31st, 372. The number of new cases admitted during the year was 2,598, and the average stay in hospital was 42.7 days. Until 1896 the hospital was a branch of the Manchester Royal Infirmary, but in that year it was transferred to the Corporation, and Mr. W. O'Hanlon, who was a member of the Hospital Committee previous to its transfer, is responsible for the following figures, which he gives in a letter to the *Manchester Guardian*. In 1881 an arrangement was made with the Royal Infirmary by which the Corporation and surrounding health authorities should pay to the infirmary a fixed sum of £1,300 a year and 21s. a week for each patient sent, with the understanding that any profit made should be expended in the extension of the hospital. The amount thus paid by the Corporation to the infirmary rose in a fairly regular way from £3,317 in 1882 to £19,793 in 1896. The actual cost to the infirmary of the patients sent rose from £2,809 in 1882 to £11,579 in 1896, though there were considerable variations in different years. The profit made by the infirmary of course varied in a similar irregular way. Altogether, during the fifteen years from 1882 to 1896, the Corporation paid the infirmary a total of £175,778; the patients cost the infirmary £131,255, so that the infirmary made a total profit of £44,523. Down to 1896, when the transfer took place, nearly £50,000 had been spent in new buildings and extensions. Mr. O'Hanlon thinks that these figures prove that with a fixed payment of £1,300 a year and a charge of 21s. a week for each patient a very handsome profit can be made, and that Monsall Hospital is not being conducted with due regard to economy by the Corporation.

Of course it would not be fair to compare the expenditure at Monsall with that at the Manchester Royal Infirmary, as Monsall has no out-patients, no accident cases, and no home patients, and it is not stated whether the sum of £23,000 includes any charges for redemption or interest on cost of land and buildings. But the following figures may be interesting as showing the cost of up-keep of the Royal Infirmary. The figures are for 1907, which was before the changes incident to removal to the new premises could have had any effect. In that year the in-patients numbered 5,293, the average number of beds occupied being 276 out of a total of 292, and the average stay in the hospital was nineteen days. In addition, there were 25,249 out-patients, 18,390 accident cases, and 1,691 home patients. The total ordinary expenditure for maintenance and administration was £19,848, which covers all the above patients. It is estimated that in the new infirmary, if 500 beds only are occupied, the minimum ordinary expenditure will be £30,000. In the case of all London hospitals the accounts are kept in such a way as to allow of fairly exact comparisons, expenditure on in-patient and out-patient work being separated; and until the same plan—which means adoption of the uniform system of hospital accounts—is followed in all Manchester hospitals, it will not be possible for them to meet and disprove charges of extravagance.

THE HOPE HOSPITAL DISPUTE.

The Salford Board of Guardians have shown no sign of an inclination to grant any of the requests of the Salford Division of the British Medical Association, nor even to negotiate with it. Accordingly the "Warning Notice" is still retained in the BRITISH MEDICAL

Journal, and the guardians have been unable to obtain any medical officer for Hope Hospital. There are now two vacancies, as the second resident medical officer, as well as the senior, has left, and the work of the hospital is being carried on by locumtenents under the visiting medical superintendent, the Division having made no attempt to prevent the guardians obtaining temporary assistance. The deadlock has now lasted since the end of July, and is entirely owing to the refusal of the guardians even to attempt conciliation. The long duration of the dispute is extremely unfortunate for the guardians, as the matter has now become so notorious all over the country that, even if the guardians offer satisfactory terms and when the warning notice is withdrawn, candidates may be shy of taking any post on any terms under the board. It is, therefore, satisfactory to learn that the Local Government Board has decided to intervene. On the instruction of the Board, Dr. Fuller, medical inspector for Poor Law purposes, and Mr. Lowry, the inspector for the district, will meet a small committee, consisting of four members of the board of guardians, to confer with them in the hope of finding a solution of the difficulty.

Two points on which the Salford Division has laid stress refer to previous recommendations of the Local Government Board inspectors which the Division thinks ought to be properly carried out. The first, made three years ago by Dr. Fuller and Mr. Jenner Fust, was a recommendation that the status of the senior resident medical officer should be raised. This was actually carried out soon after it was made, but recently the guardians have decided to lower it again to its original level. To do so would probably damage the administration of the hospital, though on that the guardians may perhaps claim to be the judges, but the Salford Division objects that to lower the status would place the senior resident in the old position of inferiority which was so prejudicial to his influence. The Division, therefore, hopes that the recommendations of the inspectors of three years ago will be upheld. The second point is that of understaffing, and here again the Division is in full agreement with the recommendation of the Local Government Board inspector made some weeks ago, and urges that it should be carried out at once. On the question of the personal treatment of the medical officers by individual guardians, of course nothing more can be done. The forcible protest of the Division must have some weight, if it only shows that the medical officers are not standing alone, but may look for the support of the British Medical Association whenever they are in the right. The question as to what is a fair salary to accept is one for the profession alone to decide. But the Division thinks that the salary offered is an example of the "miserably inadequate" salaries spoken of by Dr. Fuller himself in his evidence before the Royal Commission on the Poor Laws when he said: "It is undeniable that the majority of medical officers, indoor or outdoor, are paid salaries miserably inadequate." Thus on all points the Division has a good case, while the guardians have afforded no slight argument to warrant the conclusions and recommendations of both the Majority and the Minority reports of the Royal Commission.

The Postal Medical Officers.

The action of the Post Office Department in connexion with the Superannuation Act, which became law on September 20th, has aroused considerable indignation in Manchester medical circles, as it is felt that it affects not only the postal medical officers, but the profession generally, since the action of the Post Office must tend to lower the fees generally obtained for examinations analogous to insurance examinations. The provisions of the Act are stated elsewhere, and it will be seen that for the examination of postal officers who are entitled to free medical attendance a fee of 3s. 6d. is offered to the postal medical officers, and the Post Office seems to claim that this is a generous offer, as it might be held that the examination was covered by the capitation fee, and that the medical officers had really no claim for any fee at all for such cases. The injustice of adding such work, which was never contemplated when the capitation fee was fixed, is altogether overlooked by the department, and quite naturally the Association of Postal Medical Officers has demurred to this, and thinks that 5s. is not too much even for the men on the free list. Apparently, however, medical officers have no choice but to submit to the imposition of extra work for a miserable fee, while the department takes credit to itself for its generosity in giving any fee at all. But for postal officers not entitled to free medical attendance, another arrangement had to be made, and the department announced that, in the case of postal officers in receipt of salaries of £150 or more, the postal medical officers would be expected to do the medical examination and furnish a certificate for a fee of 5s. payable by the candidate himself. It was to make no difference how high the salary might be; it might even be £1,000 a year, and yet the fee was still to be only 5s., though the monetary benefit to the candidate would in that case be analogous to an insurance policy of £1,000. Here the medical officers were in a stronger position, as they were under no compulsion. They accordingly asked for an all-round fee of 10s. 6d.—a most moderate request, and actually lower than that usually obtained from ordinary insurance societies for amounts over £200, as many of the cases would be. The reply of the department was characteristic, and to the effect that if the postal medical officers would not do the work for 5s., it would have to be given to other doctors; and in the official instructions to heads of departments, surveyors, postmasters, etc., it is said, "in the case of officers not entitled to free medical attendance a certificate of any fully qualified medical man will be accepted." This is nothing more nor less than an attempt by a Government department to punish the postal medical officers if they will not allow themselves to be exploited. Such, at any rate, was the view taken by the Joint Committee of the Manchester and Salford Divisions of the British Medical Association which considered the matter last week. But the committee regarded it as even more than that, for the effect is not confined to the postal medical officers, and the committee felt, first, that it amounts to a suggestion that 5s. is quite enough for an insurance examination even for large amounts, and, secondly, that it was an invitation to general practitioners to "undersell" the postal medical officers if they demand 10s. 6d. The Joint Committee agreed that in ordinary circumstances this and similar work might well be thrown open to all practitioners, just as is suggested for the medical treatment of school children. But when work is thrown open, as it is in this case, with the distinct object of cutting down fees, it is quite a different matter, and it was felt that the postal medical officers deserved the support of the whole profession in resisting the attempt. Accordingly a resolution was passed expressing the hope that no practitioner would consent to do the examinations in question for a lower fee than that demanded by the Association of Postal Medical Officers, or than that usually paid by ordinary insurance societies in similar cases.

WEST YORKSHIRE.

Bradford Hospitals.

On August 19th the Lord Mayor of Bradford issued an appeal for funds for a new infirmary to be built to replace the present Royal Infirmary, which, when quite full, accommodates 210 patients. During last year the daily average of in-patients was 193, a very small margin to work on. It is urged that Bradford requires at least 300 medical and surgical beds for its daily needs. The present building, apart from its insufficient size, is out of date. The work is only performed under great difficulties, and effective administration is almost impossible on account of the lack of the necessary accommodation for an adequate staff. The Infirmary Board would like to see the various Bradford hospitals fused into one general infirmary, but feel that such a suggestion would be premature. The

Lord Mayor, in issuing his appeal, suggested that a fund of at least £100,000 should be assured before any building operations were undertaken. Over £40,000 has already been promised although no individual canvass has yet taken place, and it is hoped to raise the whole amount required in the course of the next twelve months. The Royal Eye and Ear Hospital is also asking for money for an extension which it is estimated will cost £10,000. The accommodation is not sufficient for the hospital needs, and it is proposed to raise the number of beds from 46 to upwards of 100. There would also be better provision made for the needs of the out-patients, increased accommodation for the nursing and domestic staff, an additional operating theatre and rooms for a resident house-surgeon. The hospital has a high reputation in the West Riding of Yorkshire, and although the appeal for the Royal Infirmary must necessarily militate against rapidly raising the necessary funds, there is no doubt that they will be obtained in due course.

POOR LAW ADMINISTRATION IN THE WEST RIDING.

The annual report of Mr. Philip H. Bagenall, Poor Law Inspector under the Local Government Board, on the West Riding for the year 1908, shows that the provision for the sick poor appears to be now much more adequate than in the past. In Bradford the present workhouse will in the course of time only be used for the sick, and healthy paupers will be sent into buildings three miles from the centre of the town. Dewsbury Union has recently put up a new pavilion for the sick, and the guardians have also acquired land on which a separate establishment for the able-bodied can be placed, leaving the present site for hospital purposes only. Halifax is well equipped with a separate hospital and a separate workhouse establishment. Keighley is served by a separate hospital some distance from the workhouse proper. Wakefield was amongst the first towns to complete a modern hospital, but some further accommodation is now required. Skipton has just put up an addition to the hospital and also small phthisis wards. Knaresborough and North Bierley Unions have always made good provision for the sick. Taken generally, it may be stated that all over the West Riding the most humane and thoughtful provision has of late years been made for sick paupers. In some of the workhouse infirmaries there is better accommodation for the pauper sick than there is in the general infirmaries. The report of the Poor Law Commission has now, it would seem, produced a feeling of uncertainty, and it is probable that matters will not advance much farther until the Government decide on what changes in Poor Law administration are necessary.

SKIPTON AND PHTHISIS.

A good deal of indignation has recently been aroused in Skipton in connexion with a lecture recently given in the town, in which it was stated that the death-rate from phthisis and other tuberculous diseases was extraordinarily high. At a meeting of the Skipton Urban Council, held on September 16th, the chairman contradicted the statement in very emphatic terms. Quoting Dr. F. E. Atkinson, medical officer for the district, he showed that instead of the rate of mortality from consumption of the lungs in 1907 being 3.04 per 1,000, as alleged, it was only 0.9, and the average for Skipton, instead of being 2.98, was 1.7.

ST. LUKE'S DAY SERVICE IN BRADFORD.

For the first time in the medical history of Bradford a service to which all medical practitioners were invited was held at the Bradford Parish Church on Sunday, October 17th. The service was well attended, the preacher being the Vicar of Bradford, the Rev. H. Gresford Jones. The lessons were read by Dr. H. J. Campbell, Senior Physician to the Bradford Royal Infirmary, and Dr. J. Metcalfe, Chairman of the Bradford Division of the British Medical Association.

BIRMINGHAM.

HOSPITAL SATURDAY FUND.

THE sum realized by the Hospital Saturday Fund this year is £19,306, but there are contributions still outstanding. The amount is up to the present £1,068 less than last year, but the committee is convinced that this is only a temporary decrease, and is entirely due to the bad trade prevailing during the past year. The work of the convalescent homes has been most successful, and the efforts to obtain open-air treatment for consumptive cases have been much appreciated. The committee feels strongly that the time has now come for a definite start to be made towards the establishment of the Home for Consumptives. About £4,000 has been promised, and £8,000 more is required. The distribution of the Fund to the Birmingham hospitals and nursing societies has been made much on the same lines as last year. The claims of the various institutions have been carefully considered, and £10,000 has been distributed as follows: General Hospital, £3,150; Queen's Hospital, £2,100; General Dispensary, £1,040; Children's Hospital, £800; Women's Hospital, £500; Jaffray Hospital, £400; Eye Hospital, £350; Orthopaedic Hospital, £300; Homoeopathic Hospital, Lying-in Charity, Skin and Urinary Hospital, and Moseley Hall Convalescent Home for Children, £200 each; District Nursing Society, £150; Birmingham and Midland Counties Sanatorium, £120; Ear and Throat Hospital, £100; Dental Hospital, £50; and the remaining £140 has been divided between eleven smaller institutions.

LONDON.

MILK AND TUBERCULOSIS.

FROM July 1st to October 9th, 1909, 645 samples of milk dispatched to London termini from the home and western counties have been examined by the London County Council under the special clauses of the General Powers Act, 1907. The examination of 578 of the samples has been completed, with the result that 33, or 5.7 per cent., were proved to be tuberculous. Since July, 1908, when the Act came into operation, 1,721 samples have been taken, and 1,254 examined, 114, or 9 per cent., being found tuberculous. Under the same Act, 53 farms were visited last quarter, and 2,067 cows inspected. Twenty-seven suffered from tuberculosis of the udder. In the whole period, 12,170 cows have been examined, and 289 (or 2.4 per cent.) found to have tuberculous udders. The administration of this Act, which is of such importance in protecting the milk supply of London, is costing a little more than £1,000 a year.

WALES.

MEDICAL INSPECTION OF SCHOOLS.

THE first annual report of Dr. W. Williams, County Medical Officer and School Medical Officer for Glamorgan, upon the medical inspection of the schools in the county is at present being considered by the Education Committee. A summary is given of the Education (Administrative Provisions) Act, 1907, and it is pointed out that the immediate object of medical inspection is to ascertain the fitness or otherwise of children for school life; it is not intended as an elaborate medical examination made for the purpose of treatment, but to discover whether treatment is required. A reference is also made to the fact that the effectiveness of the medical inspection will in future be one of the elements to be determined in the efficiency of each school as a grant-aided school. The Act was not put into operation in Glamorgan till April, 1908, and the report therefore deals with a period of only eight months. After giving a general review of the hygienic conditions in the schools in the Glamorgan area, Dr. Williams urges that expert advice and guidance in planning new schools, and especially in

adapting old ones to suit present requirements, is needed. It is not enough to know whether the plans infringe any local by-laws; other important matters should be taken into consideration, for school buildings should not only be unobjectionable, but serve as a model of sanitary excellence, since the unconscious lessons which children learn from their surroundings are many and lasting. Apart from the initial defects in construction, many schools are rendered unhealthy by overcrowding, overheating or underheating, inefficient ventilation, insufficient and unsuitable cleansing, unsatisfactory furniture, and imperfect lighting. Windows are often found unopened during the night and in the intervals during school hours, so that there is a failure to make proper use of the means provided for ventilation. Overcrowding in special departments is far too common. The cubic space is often found less than that prescribed, which is small enough. The class-rooms should be clean, well ventilated, of the proper temperature, and made as bright as possible. Middens and cesspits should be abolished, and, where possible, replaced by waterclosets. In rural districts without a system of drainage or water supply a great difficulty is experienced, and here earth closets should be adopted and systematically emptied. Cupboards should be provided for food, and means for heating cloak rooms, which should be particularly well ventilated, so as to get rid of foul conditions of the air arising from wet clothes, etc. At the end of 1908 there were 228 schools, with 366 departments, within the area. Three medical inspectors have been appointed under the supervision of Dr. Williams. The committee invited the co-operation and assistance of the teachers, and the report states that a ready response, displaying not only willingness but anxiety to help the medical inspectors, has been the result. Four school nurses have also been appointed to assist. The number of children inspected was 9,796, and the following physical defects have been discovered: Defective vision 543, or 6.16 per cent. of the total number of children inspected; marked post-nasal growths and tonsils requiring removal 466, or 5.28 per cent.; deformities, spinal disease, etc., 448, or 5.08 per cent.; bronchitis 371, or 4.21 per cent.; defective hearing 277, or 3.14 per cent.; pulmonary tuberculosis 28, or 0.31 per cent.; tuberculosis, glandular 30, or 0.34 per cent., osseous 17, or 0.19 per cent.

Clothing and Footgear.

	Boys.		Girls.	
	No.	Per Cent.	No.	Per Cent.
Good	1,451	32.5	1,642	37.7
Average	2,682	60.1	2,506	57.6
Bad	328	7.3	202	4.6

Nutrition.

	Boys.		Girls.	
	No.	Per Cent.	No.	Per Cent.
Good	878	19.7	1,119	25.7
Normal	2,774	62.1	2,548	58.5
Below normal	809	18.1	683	15.7

Cleanliness and Condition of the Body.

	Boys.		Girls.	
	No.	Per Cent.	No.	Per Cent.
Clean	3,193	71.5	3,320	73.3
Slightly dirty	987	22.1	792	18.2
Dirty	129	2.9	69	1.6
Verminous	152	3.4	169	3.9

Teeth.

	Boys.		Girls.	
	No.	Per Cent.	No.	Per Cent.
Good	1,839	41.2	1,787	41.0
Medium	1,902	42.6	1,889	43.4
Bad	720	16.1	674	15.5

The inspection has revealed, adds the report, a condition in many children which must seriously affect their general health, for the presence of decayed teeth often leads to indigestion, and is frequently accompanied by adenoids. The figures are practically the same for the boys and girls. In this connexion it may be stated that the Education Committee has lost no opportunity of impressing upon the teachers the great desirability of teaching the children the value and the importance of good teeth, and in each of the courses of lectures upon the laws of health lately delivered to them at the University College, Cardiff, a lecture was included on the care of the teeth.

At a meeting of the Cardiff School Management Committee on October 12th Dr. Walford, School Medical Officer, submitted a report for the term ended August 6th as to the results of the medical inspections carried out by his assistants, Dr. E. Elder and Dr. E. F. Thomas. Altogether 4,172 children were examined—4,031 at the school, and 141 at the City Hall. Of the 4,031, 20 per cent., were found to require medical treatment or supervision, and parents were notified. The principal defects found among the girls were as follow: 6.2 per cent. suffered from defective vision; 0.9 per cent. from diseases of the ear; 0.7, infectious skin diseases; 0.9, tuberculosis; and 14.8 per cent. enlarged tonsils and adenoids. Among the boys examined, 3.5 suffered from defective vision; 1.8 from diseases of the ear; 3.1, infectious skin diseases; 6.6, tuberculosis; and 9.4, enlarged tonsils and adenoids. Among the infants 1.2 suffered from diseases of the ear, 2.6 from infectious skin diseases, 6.6 from tuberculosis, and 9.4 from enlarged tonsils and adenoids. These figures do not include 88.9 per cent. of the children of both sexes found with defective teeth.

India.

The Cholera Outbreak at the Calcutta European Hospital.

The Government report on the outbreak of cholera among the nurses and in the children's ward of the Calcutta European Hospital has just been issued, together with the results of Mr. Haffkine's important bacteriological investigation. All the cases occurred within thirty hours of the first attack, and the type was so virulent that most of the deaths occurred within twenty-four hours of the onset.

A close examination of the dietary led to the conclusion that all the infection was carried in some article of food served at dinner on July 28th, since every nurse affected and also the native sweeper partook of that meal. The filtered and unfiltered water supplies and the milk are excluded, as they were common to a much larger number of persons than were attacked. The most likely article of food was a custard sauce, while some custard was traced on the same evening to the children's ward, where the only cases in the hospital itself occurred. In order to ascertain the source of infection Mr. Haffkine took 127 samples of food, water, etc., the morning after the commencement of the outbreak for bacteriological examination. He found pure cultures of the comma bacilli in the stools of five of the patients, thus eliminating ptomaine poisoning. In the samples examined he found "comma bacilli" in 14, distributed as follows:

In the Kitchen or Pantry.—(1) The water in the ice-chest in the nurses' dining hall; (2) in a large earthenware vessel in which is stored the filtered water for use while the town supply

is cut off; (3) water in a zinc bucket used to fill the earthenware vessel; (4) water in a small vessel containing peeled potatoes for the day's cooking.

In the Nurses' Quarters.—Comma bacilli were found (5) in the remains of milk in a tumbler; (6) in the wash-up water in a bucket; (7) in the remains of milk in a cup.

Seven further samples were suspicious without yielding anything definite.

The uniformity of this infection led Mr. Haffkine to suspect the kitchen servants as a source of infection, especially the masalchis, who do the washing up in the kitchen, etc. He therefore washed the hands of twelve servants working in the kitchen with sterile water, and examined for comma bacilli. The two masalchis, including one who is stated to have looked abnormally clean, yielded positive results. These two men were therefore isolated and their stools examined from August 10th to 13th—that is ten to thirteen days after the outbreak began—beyond which they refused to stay. In each of the stools passed by these men Mr. Haffkine states that he found under the microscope "comma bacilli" mixed with an enormous number of other microbes. On August 17th Mr. Haffkine reported that he had succeeded the day before in isolating them in cultures, and they gave "a pure growth of very typical-looking comma vibrios." They were obtained from faeces passed by one of the men on August 12th. In his report dated August 17th Mr. Haffkine writes:

> The bacilli isolated from the masalchis' bowels correspond, under the microscope and in culture, to the ordinary cholera microbes. Whether they possess the identical pathogenic properties of these I do not know yet.

Coming so soon after the description of "cholera carriers" in a gaol in the Philippine Islands by American workers, the above result will be of the utmost importance, should Mr. Haffkine's further tests prove the organisms isolated from the samples of food and from the native servant to be true cholera organisms. As the Government report was issued to the press on September 23rd, it is much to be regretted that no information is included as to the results of Mr. Haffkine's further tests. The very wide distribution of the comma bacilli in so many samples of water and milk, although but one single meal was infected, recalls the fact that the water of every tank, and almost all unfiltered water in Calcutta, contains comma-shaped bacilli which can only be distinguished from those of cholera by the serum test in high dilutions. Indeed, it was Mr. Haffkine and Dr. Simpson who confirmed the wide distribution of such organisms in Calcutta waters at the First Indian Medical Congress in 1894, J. D. Cunningham having previously laid stress on this fact. We must therefore await a full scientific report before accepting the terrible conclusion that those in India are all living in momentary risk of being infected by cholera through an apparently quite healthy native servant. The comparative rarity of cholera in Calcutta in Europeans since the introduction of filtered water supplies makes it certain that water was the usual source of infection, and this risk, fortunately, can easily be guarded against.

The Malaria Conference in Simla.

The conference, which, as announced last week, was opened by the Governor-General of India at Simla on October 12th, concluded its labours on October 19th, and a Reuter's telegram announces that it has embodied its recommendations under the following six main heads:

1. The appointment by the Government of India of a scientific investigation committee to be linked with special organizations for dealing with malaria in each province, the investigations to be specially directed to (*a*) the distribution of malaria in India, (*b*) the epidemiology and endemiology of the disease, and (*c*) the actions of quinine and other remedies for malaria.
2. The checking by professional agency of the existing vital statistics to determine the exact causes of death.
3. Practical measures, including (*a*) the extirpation of *Anopheles*, regarding which further investigation is recommended to discover how this can be done at a reasonable cost; (*b*) minor drainage operations, which are recommended when they are certain to be effective; (*c*) the restriction of wet cultivation near towns when the lands cultivated are known to be a source of *Anopheles*; (*d*) the introduction of fish into tanks and other collections of water; and (*e*) the oiling of small collections of water which cannot be filled up.
4. Detailed recommendations regarding the use of quinine, with reference to which the conference advises that the drug be sold in quantities sufficient for the treatment of a case, as well as in pice packets, by all possible agencies, special efforts being made to induce private vendors to engage in its distribution, a liberal commission being allowed.
5. Education.—(*a*) On the suggestion of the president of the conference, Sir Herbert Risley, it is recommended that committees of officials and non-officials, directed by the elected members of the new councils, be formed to spread among the people knowledge regarding malaria, and the measures which it is possible to take against it; (*b*) it is also recommended that the subject be taught in the schools.
6. Local Governments should be invited to make an annual assignment of funds for malaria investigation and prevention.

Canada.

Bovine Tuberculosis Commission.

An international commission of twelve, seven representing the United States, and five Canada, has been named for the purpose of devising means of eradicating bovine tuberculosis. The Chairman is Dr. J. G. Rutherford, Veterinary Director-General for Canada. The other members are Dr. M. R. Molar, Chief Pathologist of the Bureau of Animal Industry, Washington; Dr. Fred Torrence, of Winnipeg, Professor in the Manitoba Agricultural College; Dr. Schroeder, Washington; Dr. Veranus Moore, Dean of the Faculty of Comparative Pathology, Cornell; Senator W. C. Edwards, Ottawa; ex-Governor Huard, Wisconsin; Dr. Charles Hodgetts, Toronto, Chief of the Ontario Board of Health, and Dr. M. H. Reynolds, Professor of Veterinary Science in the University of Minnesota, with two packers, Mr. L. Swift of Chicago, and Mr. J. W. Flavelle of Toronto.

Australasia.

Victoria.

Cigarette Smoking.

The Premier of Victoria, Mr. Murray, has, we learn from the *Australasian Medical Gazette*, directed his attention to the very prevalent habit of cigarette smoking by boys and youths, and, as a preliminary to introducing further legislation on the subject, he called for reports on the subject from three medical men, Drs. J. Jamieson, Joske, and Springthorpe, of Melbourne. These gentlemen in their report, after detailing the legislation on the subject in other countries, declare that "the smoking of cigarettes by certain individuals is quite compatible with excellent health. The tendency is, however, for boys and youths who are not physically strong to indulge in the habit. It is a habit which grows upon them. It undoubtedly interferes with the bodily functions, impairs growth and the digestion, interferes with the circulatory system, impairs memory, and diminishes will power; and if indulged in before maturity it is harmful in a very large degree, making individuals listless, will-less, and morose. In our opinion, cigarette smoking is very bad for boys and growing youths. We suggest that it would be wise to educate the youths of the country through lectures and pamphlets, given both to the State schools and the secondary and other private schools, not to smoke cigarettes, and to explain the dangers to them; and to insist, if it is possible, that boys under 16 years of age shall not be allowed to purchase cigarettes."

Messrs. H. F. Angus and Co., 83, Wigmore Street, London, W., have issued a new catalogue of microscopes and microscopical accessories, including apparatus for collecting, preparing, mounting, and storing specimens microtomes, stains, haematological apparatus, and medical analytical apparatus. It contains also a list of mounted specimens and of models illustrating human anatomy.

Correspondence.

THE POOR LAW REPORT AND THE SANITARY MEDICAL SERVICE.

Sir,—My letter in your issue of September 25th appears to have aroused an extremely interesting discussion. Unfortunately those gentlemen who criticize me seem to have regarded my letter as an *article* written in support of the Minority Report rather than as a mere reply to your leader upon the subject. It would be easily possible to make a most convincing article upon the report in question, but it should be remembered that in my letter I restricted myself entirely to the points that were raised in the above leader, and endeavoured to prove that the statements made therein were evidently based upon a very cursory examination of the scheme that was being subjected to criticism. It is a curious fact that none of the letters attempt to show that the Majority Report offers anything more favourable than the Minority Report.

Dr. Greenwood, in his courteous reply, makes a rather misleading use of the word "gratuitous." I would suggest that the term "gratuitous work" should be restricted to that work for which a doctor gets no pay. If this is done, I agree altogether with Dr. Greenwood that "the great evil in our profession is the amount of gratuitous work given to the public." Adhering to this definition, it is obvious that the Minority Commissioners do not propose to increase this gratuitous work, but rather to abolish it altogether, and to pay properly for all work done for poor people. Under such an arrangement, medical practitioners would probably lose work for which they were in the habit of receiving no pay at all. The remunerative work, in all probability, would be left them in its entirety, and it is difficult to understand that there would be any "competition on the part of the State." Patients who could pay for treatment would not be attended or treated without fee, and so there would be no necessity for the independent practitioner to reduce his fees. Also, unless human nature alters very rapidly, the "sixpenny doctor" would for many years continue to flourish, because poor people would probably continue to look askance more or less upon treatment that they could obtain without fee. I must repeat "that it is obvious that the total remuneration from the public to the medical profession would be enormously increased," because work that is at present being done either gratuitously or for insufficient pay would, under the Minority scheme, be adequately paid for. I also contend that the Poor Law medical officer would be better off, and would do his work under vastly improved conditions under the Minority Scheme, and he would have just as much chance 'to get all the plums" as any one else. Probably Dr. Greenwood will tell us what plums are within his reach under present conditions, or would be available under the Majority Report. Very many Poor Law medical officers have personally assured me that their work is miserably paid for, and is done under most unsatisfactory conditions. The Majority Report offers a continuance of these conditions, and an extension on the lines of "club practice." Is this an attractive prospect to the Poor Law medical officer? On the other hand, the Minority scheme offers completely reformed conditions, including better pay and the possibility of doing good work.

Dr. Gough appears to find the present condition of Public Health work in small districts to be pleasant but underpaid, and suggests that the members of the profession have themselves to blame for this. I think if he were to confer with a number of part-time medical officers of health of rural and small urban districts, he would find that the conditions are much as I described. They would tell him that if they were to do the amount of work that they consider to be necessary in the interests of public health, their services would be not so well paid for as those of club doctors. The disheartening work that Dr. Gough refers to in club practice and practice among the poor would be largely eliminated under the Minority scheme. The average part-time medical officer of health finds it impossible to do "honest and conscientious sanitary work." If he did, he would have little time left for practice, and would not only lose income, but his post as well. Conditions under which one is unable to do one's duty are, I repeat, degrading. By this statement I do not mean to make the slightest reflection upon the holders of such posts. In fact, I have a great admiration for the ability of many of them, and am sure that, given proper conditions, they would do splendid work in the public service.

Dr. Gough's estimate of the salaries of such a staff as would be necessary for the working of the Minority scheme is obviously based upon some present figures. I have already pointed out that the demand for qualified men would be so great that the profession could dictate its own terms. I should imagine that there would be no difficulty in securing a minimum salary of £500 a year.

It is rather difficult to follow the letter from the "M.O.H. of a Combined District." It would have been more convincing if he had disclosed his identity, and it would then probably have been unnecessary for him to have referred to his "experience of administration on a large scale," and his acquaintance with the work "in some large towns." When he says that Dr. Downes's scheme would only take away from the medical officer of health his education work, I must merely ask him to read the scheme again. The present whole-time medical officers would in all probability find very slight alterations in their conditions of work, and any alterations would be in the way of improved conditions. Those among them who have shown powers of organization and administration would have a strong claim for the senior posts under the Minority scheme. I was obviously unfortunate in my use of the term "local assistants," but it is difficult to find better. The conditions of the appointments are not likely to be *infra dig.* for any of the present holders. Possibly the only differences that a whole-time medical officer of health to a combined district would find are that he would report to the County Council instead of to several small district councils, would have a secure appointment, would in many instances be better paid, and would stand better chances of promotion. His recommendations would, moreover, be much more likely to be carried out. If "M.O.H. of a Combined District" had had some experience in county work and administration, he would realize that the suggested additional work could be undertaken quite easily without unduly pressing upon the members of county councils.

Dr. Bristowe appears to imagine that merely to state that the Minority Report is "pure socialism" is sufficient to condemn it. "Arguments" of this kind are not convincing to many, and it will go badly with the profession if it allows political bigotry to influence its attitude towards a scheme that contains the possibility of the dawn of a new era of prosperity for the profession.

It is not my wish, at this time, to discuss the Majority scheme, especially as you have in your issue of October 9th pointed out some of the insidious suggestions that are made in it. To many it appears as an elaborate attempt to exploit the medical profession, and to continue and extend all that is so disheartening and unfair in the present Poor Law work and in club practice.—I am, etc.,

Winchester, Oct. 11th. Robert A. Lyster.

SUPERANNUATION OF POOR-LAW OFFICERS.

Sir,—Your correspondent, Mr. Nicholls, may be quite right in his contention that I have overstated the claim of a Poor Law officer to compensation under the Superannuation Act on the abolition of his office. According to one interpretation of the Act, he would only be entitled to a return of his contributions, but it seems to me the Act might be construed differently. Section 8 defines a number of cases where a return of all moneys paid towards the superannuation fund shall be made, *provided the officer shall not have become entitled to a pension.* Section 2 makes "permanent infirmity of mind or body" a good title to superannuation, provided the condition laid down in Section 3 is fulfilled, namely, that the officer has completed ten years' service.

It, therefore, seems not unreasonable to assume that the words "entitled to superannuation" might mean, if an officer have served more than ten years. As "bodily injury," necessarily including permanent sickness or disease, is specifically mentioned in Section 8, and it is well recognized that officers who have become permanently disabled by "bodily injury" after ten years' service are entitled to, and in many instances have received, a *pro rata* pension, unless the reading I suggest is true, it is not

clear why "bodily injury" is mentioned in the section, except to indicate that loss of office for any of the causes laid down in this section was to be treated in the same way as if the said loss arose from "bodily injury." Surely, it is not unnatural to imagine that the legislature might intend that where a Poor Law officer was deprived of his office for no fault of his own, but for public reasons, he should receive the same treatment as if he lost the same office on account of bodily injury or disease.

I do not know of any legal decision on this point, and if my view is erroneous the position of the Poor Law officer is worse than I stated it to be in my address to the Metropolitan Relieving Officers' Association.—I am, etc.,

London, N.E., Oct. 16th. MAJOR GREENWOOD.

THE REPRESENTATIVE MEETING.

SIR,—At the risk of troubling your readers with some ancient history, I must ask to be allowed space in your columns to comment on a certain resolution of the last Representative Meeting, in connexion with which I find that my action has received, for various reasons, much adverse criticism.

As a part of the Report of the Hospitals Committee, Dr. Pope moved the following resolution:

> That in the opinion of the Representative Meeting no fresh public medical institution should be opened without previous consultation with the local medical profession through some organized body such as the local Division of the British Medical Association.

Upon which I moved an amendment to omit the words "some organized body such as." As time was pressing I did not make any remarks as to the desirability of the amendment or its meaning, a course I now much regret, as its real object was not grasped by the Representatives; but Dr. Pope's suggestion, in opposing it, that the meaning was to prevent other bodies being consulted was, to judge from the discussion, accepted by the meeting. The resolution as I would have had it amended reads thus:

> That in the opinion of the Representative Meeting no fresh public medical institution should be opened without previous consultation with the local medical profession through the local Division of the British Medical Association,

and would seem to be quite unobjectionable and explicit. Neither Dr. Pope nor any other speaker attempted to show how this would prevent any action of any other organized body; indeed, it could not, as, of course, the Association has no control over them, nor over any person or persons who might wish to consult them. Nevertheless, Dr. Pope's suggestion that this prevention was the object of the amendment has been followed here as the correct explanation, and I have been criticized adversely for moving the amendment. The object was to secure that the Divisions should have the opportunity of discussing the desirability of any new public medical institution. I hope other organized bodies will also discuss the question, but would remind my critics that, so far as I know, no other organized body has the machinery to make its opinion of a proposed institution, if unfavourable, of any force in a similar manner to those Divisions which possess the "Bradford rules." Moreover, in many parts of the country there is no semblance of local medical organization apart from Divisions of the Association.

There has recently been started in Birmingham a provident dispensary scheme, which may or may not be a good thing, but about which no organized body was consulted, not even the local General Practitioners' Union, a body which has, for a local one, a very strong organization. It is well known that a considerable number of practitioners objected to the scheme, perhaps a majority, but they were not consulted at all, and therefore had no opportunity of rejecting or improving it. It was with this instance in my mind that I moved the amendment, with the idea of strengthening the hands of the general practitioner, and not with the intention of injuring the Union (of which I am an old official and one of its first members) or any other organized body of the profession.

There is one other point upon which my action has been criticized which is, perhaps, of more general interest, and which is sure to recur in the future in the history of the Representative Meeting. My instructions from the Division were to support the Report of the Hospitals Committee, and it is contended that the moving of this amendment was an infraction of the instructions. In the letter I quite admit that this was so, but, seeing that the amendment was only intended to increase the power of the Association, which was the trend of the whole report, I believed that in the spirit I did not go farther than my Division was willing that I should.

At any rate, it must be obvious to any Representative who has been instructed by his Division that he must from time to time depart from the letter of his instructions. In which case I trust he will receive from his electorate a generous construction of his transgression.—I am, etc.,

E. D. KIRBY,
Representative of the Central (Birmingham) Division,
Edgbaston, Oct. 19th. British Medical Association.

MUNICIPAL ESTIMATE OF THE VALUE OF MEDICAL SERVICES.

SIR,—At a meeting of the South-West London Medical Society held to-day at Bolingbroke Hospital the enclosed correspondence was brought before the members, and they, feeling that it was a matter which should be brought before the profession at large, asked me to forward it you for early publication.—I am, etc.,

LEONARD S. MCMANUS,
October 13th. President, South-West London Medical Society.

Metropolitan Borough of Wandsworth,
Council House, Wandsworth, S.W.,
October 4th, 1909.

Dear Sir,—A Committee of this Council have under consideration the desirability of retaining the services of a medical practitioner in each of the five districts into which the borough is divided to examine the Council's employees who claim sick allowances in cases of accident or illness, and to certify whether or not they are capable of discharging their duties.

Before making a recommendation on the subject to the Council the Committee are desirous of ascertaining the approximate cost of the proposed scheme, and from inquiries which have been made the following appear to be suitable fees for the work:

(*a*) If the employee attends at the medical practitioner's surgery, 1s. per case for each examination and report.

(*b*) If the employee is unable to attend at the surgery and the medical practitioner visits him at his home, 2s. 6d. per case for each examination and report.

Wherever possible, the men would be required to attend at the medical practitioner's surgery for the examination, but in some cases it would be necessary for it to take place at the men's homes or elsewhere.

With the view of assisting the Committee in coming to a decision on the subject, I shall be obliged if you will inform me whether you would be willing to undertake the work referred to in the district No. 1, shown on the enclosed map, on the terms above mentioned. Kindly return the map when you reply.

I am, dear Sir, yours faithfully,
HEN. GEO. HILLS,
Dr. B. Duke. Town Clerk.

REPLY.

Windmill House, Clapham Common,
October 11th, 1909.

Dear Sir,—While thanking you for so kindly submitting to me the list of fees offered by the Council for examining and certifying their employees, I must respectfully decline such a tempting offer. I can only regret the Council have such a contemptible opinion of the value of a medical man's time.

I am, dear Sir, yours faithfully.
B. DUKE.

Henry Geo. Hills, Esq.

THE UNIVERSITY AND THE MEDICAL SCHOOLS OF LONDON.

SIR,—Mr. Wallis, when opening the session at Charing Cross Hospital, utilized his opportunity to set forth his views concerning London University in a very drastic manner; but many who read his speech, and also your article on the same subject, must absolutely disagree with the views there expressed, and it behoves the graduates and undergraduates of the university who have attained their relative positions with considerable extra study and self-sacrifice, to resist with all their energy any lowering of the standard of what is recognized as one of the "higher qualifications."

The view is absolutely wrong that accuses the matriculation examination of being the cause of the relatively increasing popularity of provincial universities. I speak with the authority of one who was educated at a provincial university as an external student for the London degree.

London men do not go to provincial universities; the latter fulfil their intended function by providing a medical education for men who thirty years ago had to go to Edinburgh and London to get it. Their popularity is due, not to the granting of a degree as opposed to a diploma, but because students can live cheaply at their own homes, and under the parental eye. If Mr. Wallis thinks that by lowering the standard to compete with the provinces he will attract more pupils to the London schools he is vastly mistaken: for, as Dr. Campbell Stark aptly says, "Why should a provincial candidate come to London to work for a degree which will be no better than any other?"[1]

Turning to the competition between the Conjoint Board and the university, many men from the beginning choose the former because, as I pointed out in a letter to the Journal on August 29th, 1908, the Conjoint Board opens the portals of the hospitals to those desirous of holding appointments on the staff, whereas the university does not do so. To repeat my previous contention, Why should a man take his M.D. only to be told by the regulations of his own hospital he must be either a M.R.C.P. or F.R.C.P.? And, again, what advantageth it a student to enter and work for the M.S. if, at the end of a comprehensive course of education, he is told that "candidates must hold the diploma of F.R.C.S.Eng."?

From our earliest student days we are told, "If you wish to be a surgeon, you must have the Fellowship"; hence, as most men have, especially in their earlier career, an attraction towards the glamour of the operating theatre and hear anecdotes of phenomenal fees, they turn to the Conjoint Board as their *gradus ad Parnassum*.

I have just carefully perused the regulations for the matriculation as given in your Educational Number, and still hold the opinion expressed in my letter of August 29th, 1908, that the examination, with its broad choice of optional subjects, is not of any unusual difficulty, but is a good all-round test of general knowledge for intelligent youths, and of such only should London University be built up.

Therefore I say: "Keep up the standard of all the examinations, make those for the final examinations for the M.D. and M.S. degrees still more stringent if necessary, and give the holders the same practical advantages as those holding the higher diplomas of the colleges," and then the London degrees will hold the position, as they should, of the most-sought after qualifications in the kingdom.—I am, etc.,

London, N.W., Oct. 19th. Horace Wilson, M.B., B.S.Lond.

ALCOHOL IN RELATION TO MULTIPLE NEURITIS.

Sir,—It might perhaps, at first sight, appear from the article on the above subject by my friend and colleague, Dr. Judson S. Bury, in the British Medical Journal of October 9th, p. 1025, that he and I differ considerably on the point in question. As a matter of fact, we agree almost entirely. The idea that I deny the existence of a pure alcoholic neuritis I thought I had sufficiently disposed of in a short paper I wrote in the *Review of Neurology and Psychiatry* for April, 1905, in answer to Dr. Buchan, but apparently I must once more explain myself.

Dr. Bury has given certain figures to show that the percentage of cases of peripheral neuritis occurring at the Manchester Royal Infirmary for seven years after the arsenic epidemic is about the same as for the seven years before the epidemic, and finally deduces from this that alcohol *per se* was the cause of the neuritis cases before the epidemic just as much as since the epidemic. But I have examined the annual medical reports from which he obtained his figures, and I am not convinced that his deduction is correct. First, he has inadvertently included the year 1901 as one since the epidemic, but, as a matter of fact, the epidemic had not then ceased, and 21 cases of "arsenical" neuritis, and only 7 of other forms are entered in that year. Secondly, the classification of the various forms of neuritis in the reports is, I regret to say, of so meagre a kind (in some years not classified at all) that the mere numbers are of little use. But, taking the numbers as they stand, I work out the percentage of all forms of neuritis in the Manchester Royal Infirmary wards as 1·20 for the years 1893–99, and as 0·96 for the years 1902–08, a not inconsiderable reduction. Thirdly—and this, to my mind, is the most important objection—these figures give one no idea of the relative frequency of the *severe* cases of neuritis which we now see as compared with what we used to see, and I am sure Dr. Bury will agree with me that, although we do occasionally see, both in hospital and private practice, *severe* cases of neuritis in patients who have taken alcohol in excess, yet the number of these *severe* cases is very much fewer than formerly.

I again repeat that, although I believe neuritis will occur in patients who take alcohol (free from arsenic), yet, as a rule, neuritis is not *severe* in degree, and, as I wrote in the British Medical Journal, July 25th, 1903, considering the large amounts of alcohol consumed in this country, neuritis is a very rare complication.

Taking all forms of peripheral neuritis, the disease probably occurs most frequently (as regards actual numbers) amongst those who take alcohol in excess, but this is because the poison is so much more frequently an antecedent than any other poison which may cause neuritis. But, apart from actual numbers, in my opinion peripheral neuritis is more prone to occur and is of a more severe character after arsenic, beri-beri, diphtheria, and lead.—I am, etc.,

Manchester, Oct. 18th. Ernest S. Reynolds.

Sir,—The old proverb that an ounce of practice is worth a pound of theory is a very true one, and may, I think, be well considered in regard to the action of alcohol in the human system.

Having paid especial attention to the subject during half a century of professional life under varied climates and conditions, having noted the opinions of scientists and the profession both home and foreign, and endeavoured by both voice and pen to influence public opinion and to arrive at the truth, I am much interested in the note on alcohol in relation to multiple neuritis by Dr. Judson Bury (British Medical Journal, October 9th, p. 1025). That we have abundant scientific evidence as to the injurious action of alcohol on both animal and vegetable cell life and protoplasm there can be no doubt, and that the poison of decomposing alcohol and its compounds should occasion a peripheral neuritis is a very natural assumption. Nevertheless, owing to the bacterial and chemico-physiological changes in operation in the system, it may be difficult or impossible to prove it. My own experience is in accord with the opinion of other observers that neuritis is due especially to spirit drinking. I recall many cases in patients who were at one time large spirit drinkers suffering from peripheral neuritis but who completely recovered from it when they ceased to take alcohol in any form. Surely this must be the experience of many practitioners, and confirms the opinion of Dr. Parkes Weber, quoted in the last paragraph of Dr. Bury's paper, being also in agreement with the proverb quoted above.—I am, etc.,

Arthur E. T. Longhurst, M.D.

Chandlersford, Hants, Oct. 13th.

REGISTRATION OF NURSES.

Sir,—I observe in the last issue of the Journal a paragraph from a Scottish correspondent containing statements contrary to facts concerning Lord Ampthill's Nurses' Registration Bill—namely the bill promoted by the Society for the State Registration of Trained Nurses.

In contrasting the bill with that promoted in Scotland, the writer of the paragraph says, "The chief difference seems to be that in the Scottish bill the Registration Council represents the nurses, the training schools, the medical profession, the universities, and the Government departments, while in Lord Ampthill's bill the Registration Council only represents the nurses."

In the bill of this society the clause constituting a "General Council for the Registration of Nurses in the United Kingdom" provides for a council of sixteen persons—namely, (*a*) three persons to be appointed by the Privy Council, (*b*) one registered medical practitioner to be appointed by the Local Government Board, (*c*) one registered medical practitioner to be appointed by the General Medical Council, (*d*) three registered medical

[1] British Medical Journal, March 27th, 1909.

practitioners to be appointed by the British Medical Association, (*e*) one registered medical practitioner to be appointed by the Medico-Psychological Association, and (*f*) seven registered nurses, to be elected as the direct representatives of the registered nurses. A council so constituted cannot accurately be described as only representing the nurses, and the writer of the paragraph must either have criticized a bill which he has not read, or must have purposely designed it to misinform your readers.

In the clause relating to the constitution of the General Council in the Scottish bill, the only medical practitioners specifically mentioned are two medical superintendents appointed by the Secretary for Scotland, although presumably the "persons" to be nominated by some of the bodies named in the bill will be medical practitioners. The British Medical Association is entirely excluded from representation under this bill, nomination being placed in the hands of academic bodies, some of which have no expert knowledge whatever of nursing education.

Again, the writer of the paragraph states, "The Scottish Bill . . . admits . . . mental nurses to a special register; this Lord Ampthill's bill does not do."

Lord Ampthill's bill provides for the registration of mental nurses in the following clause: "There shall be a nurses' register comprising . . . (2) A supplementary register of asylum trained nurses to be called the 'Mental Nurses' Register,'" etc.

This clause disproves the statement made by your Scottish correspondent that Lord Ampthill's bill does not admit mental nurses to a special register.

Another misleading statement in the paragraph above referred to is that "the registration fee in the Scottish bill is 2 guineas, while in the English bill it is 5 guineas." This is incorrect. The registration fee provided for in each bill is 2 guineas, but Lord Ampthill's bill makes provision for a further fee "not to exceed the sum of 3 guineas for examination."

Lord Ampthill's bill provides for one portal of admission to the nursing profession, that is, after training in the wards of hospitals approved by the Council and passing "such examination as the Council may prescribe."

The Scottish bill requires evidence of training "in the wards of a hospital or of hospitals, or of an institution approved of by the Council." No independent test of efficiency is imposed.

But though the Scottish bill provides for no uniform, central, independent examination, and proposes to register nurses upon their hospital certificates, and for this purpose recognizes nurses trained in fever hospitals only, it demands reciprocity of registration in the United Kingdom —reciprocity of professional and economic advantages.

Lastly, your correspondent says: "It will be unfortunate if some understanding is not come to by the promoters of the several bills." I may say, therefore, that a very substantial understanding in favour of one bill has been arrived at in conference between the delegates of this Society, the Royal British Nurses' Association, the Irish Nurses' Association, and Sir William Macewen, representing the views of the newly-formed Scottish Nurses' Association, of which he is President, the object of which is to support a State registration of nurses by a single portal system for the United Kingdom after having passed a State examination conducted under the auspices of a central board. The only society promoting a Nurses' Registration Bill which is in opposition to this fundamental principle of registration is thus the Association for the Promotion of the Registration of Nurses in Scotland, of which Lord Inverclyde is President, and Dr. Mackintosh, Medical Superintendent of the Western Infirmary, Glasgow, Honorary Secretary.—I am, etc.,

ETHEL GORDON FENWICK,
Honorary Secretary, Society for the State Registration of Trained Nurses.

London, W., Oct. 19th.

THE WORLD OF MEDICAL BOOKS.

SIR,—Is it not true that we appear to be living in the age of the "literary surgeon and the picture book doctor"? Any one who has any knowledge of the times cannot fail to think so. Even the modern works on clinical medicine, in very many instances unlike the works of Graves, tend to be largely collections of laboratory methods, very valuable, no doubt, but not filling the place of the older clinical works. The clinical phenomena associated with many morbid processes are not discussed at all in many books, and little help can be gained from their study in the elucidation of many disease problems. Even in treatment, how often do we see the words "suitable diet" written, when the actual diet required is not stated. There also seems less attention paid by many writers to the study and actual relief by treatment, of the discomforts of the dying patient, such as were dwelt upon by the late Hilton Fagge. We are all also well aware of the enormous amount of vain repetition which occur in medical works in these days.

Let us hope that the future medical world will be productive of fewer novelistic writers and artists and many more clinical writers of the old stamp.—I am, etc.,

October 5th. "OMEGA."

MEDICAL TEACHING.

SIR,—The teaching of medicine is an annual topic of discussion, and, notwithstanding all the able addresses on the subject and the correspondence in the JOURNAL, little improvement is apparent, but rather, I should say, the reverse. I have carefully watched for years the number of entries for medical examinations and compared them with the passes—the only way of arriving at an opinion of the quality of the teaching for examinations—and this does not speak well for teaching. The most recent that I have examined is that for the first part of the Cambridge D.P.H. examinations, and here, if we compare the passes with the failures, we may safely say that teaching for that examination has collapsed, one-third only of the candidates presented having scraped through. Now, this is a serious condition—so serious that some system must be adopted whereby aspirants to degrees may be informed of the schools where they may have education likely to fit them for an examination.

We may take for granted in the Cambridge examination that all who presented themselves were men of average ability, seeing they had already obtained a qualification of some kind; but, leaving their first school, they had been unfortunate in choosing a public health school where the teachers had been unable to direct their studies so as to qualify them for such an examination. To many of them the failure is serious, as they, being young, can ill afford the money and the time to prepare for another examination. If Cambridge hopes to continue as an examining body they must of necessity adopt some means of advising the aspirants for their D.P.H. where they may find a suitable school, and they must after each examination, in publishing the results, name the schools at which their successful candidates were educated. This might be adopted by other schools, and naturally teachers would be spurred to improve their system of teaching.—I am, etc.,

October 10th. PRO BONO PUBLICO.

PS.—I am assuming, of course, that the examination taken here as an example was not outrageous in its requirements.

EXHUMATION AFTER FIVE CENTURIES.

SIR,—On the 7th of this month I had to examine some human remains recently disinterred in this town after being undisturbed for some five hundred years.

The body was wrapped in several layers of cerecloth, the whole being enclosed in a lead coffin, moulded to the shape of the body, and absolutely airtight. When first found the lead covering was opened and the body removed, the cerecloth was also partially opened, and the remains reburied in a rough wooden case. In this manner air and moisture had been admitted to the corpse some three weeks before, acting on an order from the Home Office, I had a chance of examining it. At the inspection, which was needed to determine the sex—rumours being current that the body was that of the "Fair Maid of Kent"—the following appearances struck me as being of some interest in view of the length of time since burial, and as showing how marvellously preserved a body may be when hermetically sealed even after the lapse of several centuries.

On removing the wrappings, which were apparently of linen heavily charged with beeswax, the body was seen quite naked, the arms straight down the sides, the right foot crossed over the left, both feet pointing to the left.

The integument was unbroken and all the muscles were well defined, the subject being a sparely-built man, about 5 ft. 9 in. in height, and, as far as one could judge, about 70 to 75 years old at the time of death. The skeletal muscles to the touch had the same consistency as those of a corpse a few days old, and all the joints were perfectly mobile. The head—dolichocephalic—was well shaped, with a ring of reddish hair, partly grey and scanty in quantity; the nose was flattened in but easily moulded into shape; the eyeballs had perished; the cutting and grinding surfaces of the teeth were much worn down, but were in good condition with the exception of two decayed molars; the tongue and gums had perished; the chin had a straggling beard of red hair about 2 in. long. The face was covered with a fine linen cloth.

The hands were remarkably small, slender, and with well-kept nails. Pubic hair was present, but sparse. The penis was represented by the integument and a lengthy prepuce; the scrotum, of a remarkable size, was empty, giving the impression that a hernia or hydrocele had once been present, but both external rings could be easily felt, and certainly negatived a rupture. The abdomen was retracted. No examination of the internal organs was made, the question of sex being the only point at issue, but it seemed obvious that all the tissues, with the exception of bone muscle and skin, had, in the course of ages, perished. The whole of the surface of the body was of a deep chocolate colour. The remains proved to be those of a certain John Stanneford, of the Order of Blackfriars, buried about 1400.—I am, etc.,

George Boyd,
Medical Officer of Health, Borough of Stamford.

October 12th.

KENNELS AND DOGS IN TOWNS.

Sir,—There are many tenements in London, and in other big towns, which would more appropriately be designated kennels. The number of dogs kept in flats and houses is, in certain quarters, quite extraordinary. They are a constant menace to health, and at frequent intervals during the day and night become objects of disgust. To me it is astonishing that the guardians of public health take no notice. Pigs are not allowed to be kept in London, but what difference can there be between the useless defaecating, urinating dog and the pig (which, moreover, possesses the advantage of being ultimately converted into meat) as far as health is concerned?

Now certain localities in London are, and have been for some time, converted into a dog's latrine. Morning and evening, with extreme regularity, mistresses and maids may be seen tethered to dogs of various breeds; the quadrupeds drag the bipeds along, stopping at intervals to void their ordure, while the human female looks on encouraging and admiring their favourites' tortuous efforts at defaecation and urination.

It is a common custom of these animals to nose the ordure they come across, and I have often seen pet dogs lap up recently voided canine urine. The next thing that happens is that the human female embraces the animal, so overjoyed she seems to be at the successful result, and then allows it to lick her with the tongue just fresh from excrement. This appears to be a pleasant occupation, and about the delights thereof I have nothing to say; but I would call your attention to the fact that the accumulation of ordure on the pathways is in itself not only revolting, and more especially when you have to pick your way through mounds of excrement, or unexpectedly trample on it in the dark, but is a serious source of contamination and infection to human beings.

Some two years ago the London County Council passed a by-law against spitting in public places. This was very good in itself, but why did not this powerful body consider the whole question of animal excreta? If human beings are allowed to spit, etc., only in private places, it would have been logical to make the owners of dogs responsible for the acts of their animals, and to have exacted a fine on conviction for allowing their animals to pollute public places. Persons who desire to keep dogs in towns should not be allowed to keep them within dwellings, and should be compelled to provide proper latrines for them.—I am, etc.,

October 16th. M.D.

THE CRESCENDO MURMUR.

Sir,—My paper on the crescendo murmur was not written as much with the intention of starting a discussion on its rhythm as to have placed before those interested the arguments for and against the theory that the murmur is caused by auricular systole, for so many of the deductions of modern cardiology depend partly or wholly on this view of the rhythm of the murmur. I provided arguments which seem to me to disprove this theory, and invited Dr. Mackenzie to state those which he considers prove it indisputably. I, therefore, am sorry that my invitation—which was offered with that respect which everyone must acknowledge is due to one who has brought such a vast amount of clinical experience and original observation to the consideration of the subject and has written so much on it—has not been accepted, and only one side of the case has been presented. I greatly appreciate the interest which Sir John Broadbent and Dr. Taylor have shown in my paper, and whilst it is difficult to reply satisfactorily to criticism, especially on points of detail, in a communication like this, I will do my best to meet their objections to the views I have defended.

As Dr. Taylor states, I concede a great part of what Dr. Barclay and other supporters of the ventricular-systole rhythm of the murmur denied; and that the murmur I am concerned with may stand alone or be continuous with an admittedly diastolic murmur. He also rightly interprets my attitude as to the rising-pitch characteristic of the murmur; it is chiefly on my explanation of this taking place at a narrowing orifice that my argument added new material to the old discussion; and I may point out that the modern school, represented by Sir John Broadbent, accepts this rising pitch as being a characteristic of the murmur. I certainly look upon rising pitch as indicating a closing orifice; if this view is wrong my theory collapses. Will Sir John explain how it is produced under the auricular-systole rhythm theory?

I agree with Dr. Taylor when he says that the crescendo murmur occurs in a relatively early stage of the disease, and disappears later. This is because it can only be caused before the valve assumes that rigidity which is generally found, as Sir John Broadbent says, at death in cases of mitral stenosis. In the early stages the valve is capable of being closed by intraventricular blood pressure, though it requires more pressure, which is developed at a later period of ventricular systole, than that for the normal valve's requirements. When the systolic murmur is heard, and no crescendo murmur, it means either that the valve is too rigid to be closed at all, or that the ventricle is incapable of developing sufficient pressure to close it. For the latter reason, too, a crescendo murmur may reappear after a heart, which has been rested or treated with drugs, has regained sufficient power to close the valve. In quick-acting hearts the murmur may be too short to be recognizable, but it becomes audible again when the heart beat is slowed by treatment.

Both my critics object to my interpretation of Dr. Galabin's cardiographic tracings. If Dr. Taylor's contention is right that in Fig. 13 there is a murmur two-fifths of a second long after the rise denoting auricular systole, how is this murmur caused? We are taught now that auricular systole occupies only 0.08 second in duration, and "is practically constant." Auricular systole can therefore not be responsible for all the 0.4 second. Why cannot the early and ineffectual venticular systole which, I believe, causes the crescendo murmur, be responsible for that part of the long murmur waves left over after the auricle has done its 0.1 second of work?

Dr. Roberts has commented on Weiss and Joachim's work, but his interpretation of tracing Fig. 5 is different to their own. They look upon the murmur as diastolic, continued by a "presystolic reinforcement" and they point out that there is no sudden alteration of the curve of the murmur at the point of time when auricular systole begins, as they expected to find if the crescendo murmur be of auricular-systole rhythm. The school Sir John Broadbent represents, accepts the fact that a brief crescendo murmur can be caused by slight regurgitation through the mitral orifice at the beginning of ventricular systole; this is a great acknowledgement of the validity of the theory I have defended, and I cannot see how such a peculiar murmur can be caused in two different ways.

There is one most important point in Weiss and Joachim's work, the value of which, with all respect, I think Dr. Taylor has not fully appreciated—namely, that in mitral regurgitation the presphygmic *plus* carotid wave interval is increased, almost to double its normal extent—that is to say, that between the onset of ventricular systole and the carotid pulse in mitral regurgitation there is a period of 0.12 to 0.15 second compared with the normal 0 08 second; and what is a crescendo murmur, in my view, but mitral regurgitation? The tracing of an uncomplicated crescendo murmur (Fig. 4) wants a deal of explaining away by the auricular-systole rhythm theory. Fig. 5 is more debatable, but I put it in purposely so that I might not be thought to be hiding difficulties, giving the observer's own comments on the absence of any indication of auricular systole where they expected to find it as meeting criticism of its value from my point of view. Another tracing (their Fig. No. 21) is better evidence for my theory, though not so good as No. 20 (my Fig. 4).

Dr. Taylor does not understand me rightly when he says that, under my theory, the stronger the ventricle is the less able is it to lift the aortic valves without a preliminary mitral regurgitant flow, and vice versa. What I maintain is that, the weaker the ventricle, the less able is it to close competently a mitral valve made more difficult of closure than a normal valve is. Dr. Taylor agrees that in ordinary mitral regurgitation, although it cannot close the stiffened valve, the ventricle can generate sufficient force to open the aortic valve, blood all the time regurgitating through the patent mitral valve, and producing an ordinary systolic murmur of regurgitation. Weiss and Joachim show that in these cases the presphygmic interval is abnormally prolonged, owing to the escape of blood into the auricle delaying the development of sufficient intraventricular pressure to open the aortic valve. A crescendo murmur simply means that the mitral valve is closed during the production of a mitral regurgitant murmur, and that the valve is incompetent for only a portion and not for the whole of ventricular systole, as is the case in an ordinary systolic murmur. It is practically a *presphygmic* murmur in rhythm.

The fact that the crescendo murmur is only heard in the back with extreme rarity presents no difficulties, in my opinion, because it is generally caused by a small regurgitation of blood and under moderate pressure. It arises at the onset of ventricular systole and at a closing valve orifice, as compared with an ordinary prolonged systolic murmur produced at a uniformly patent defective valve by the full force of ventricular systole. It is merely a question of penetrating power of the murmur, for many mitral regurgitant murmurs are not heard at the back.

The difficulty about the reversal of engines is never raised in the practically analogous condition of the see-saw murmur of aortic disease. When a rising-pitch murmur is actually or apparently continuous with an undoubted mitral diastolic murmur, the latter is of a decrescendo or uniform character. We never hear a murmur which begins at the second sound and runs on to be terminated by an abrupt first sound, which is continuously and progressively of rising pitch and crescendo force character. Dr. Taylor will see that rising pitch, meaning a closing valve, is a very important point in my argument.

Sir John Broadbent's answer to my question about the absence of a crescendo murmur in aortic stenosis does not meet the point. In both conditions you have blood passing from one chamber to another chamber or vessel in which it is lower in pressure than in the propelling chamber. True, the pressure in the aorta during ventricular systole is much higher than in the ventricle—which is nearly full and not empty, as he says—during auricular systole, but then the muscular power of the ventricle is proportionately greater than that of the auricle. It would be very hard to prove that the first sound of a heart with diseased auriculo-ventricular valves is mainly muscular in origin, as he contends, whatever may be its cause in the normal condition of affairs.

I should like to have added some further reasons to those in my paper for venturing to doubt some of the deductions from jugular pulse tracings, but the space at my disposal here will not permit of this. I must defer further criticism for the present.—I am, etc.,

Manchester, Oct. 11th E. M. BROCKBANK.

THE CAUSE OF DYSMENORRHOEA.

SIR,—The attention of many members of the profession would be arrested by the report of Dr. McCombie's case in the JOURNAL of October 9th, p. 1072. Personally, I was much interested in the observations therein recorded, supporting as they do the views which I ventured to express in the JOURNAL of May 15th, and to which he refers at the end of his communication.

It seems to me that the interest of this case lies not so much in the condition of the cervix described—for spasm of the internal os is common under such circumstances—but rather in the fact that the cervical spasm, actually demonstrated on palpation as a "constricting band," produced pain of so familiar a type that the patient was led to believe that she was experiencing a recurrence of her painful menstrual periods.

With a past history of dysmenorrhoea, this admission by the patient is significant, since it is but natural to conclude that her former sufferings—similar in all respects to her present sensations—were due to a similar cause, cervical spasm. Moreover, the diminution in the rate of flow of discharge during the acme of pain, and its reinforcement on dispersion of the latter, afford striking testimony to the presence of that relative obstruction in the cervix for the recognition of which I pleaded in my previous letter.

It is mere anticipation to remark that at least one gynaecologist of eminence would interpret the painful sensations of this Bengali patient as manifestations of neurasthenia. Nationality is no deterrent in the eyes of the devotees of this wonderful term—I cannot write disease—for the omniscience of its supporters has bestowed the name upon many diseases in many peoples. Therefore it is but natural that the term "neurasthenia" should haunt every attempt to unravel the perplexing problems of that elusive disease, spasmodic dysmenorrhoea.—I am, etc,

Dukinfield, Oct. 18th. GERALD RALPHS.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

The R. C. Brown Scholarship.

DR. R. C. BROWN of Preston has most generously promised to continue for a further period of two years the Pathological Scholarship of £150 per annum which he founded in connexion with the Committee for the Study of Special Diseases.

ROYAL UNIVERSITY OF IRELAND.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., B CH., B.A.O.—*J. A. Brown, *†J. B. Butler, M.A., *†J. J. Gilmore, *†J. A Hanrahan, *†E. G. Kennedy, *†E. W. Kirwan, *†J. M. McCloy, *†T. Scanlan, C. Alexander, J. Anderson, J. A. Black, P. M. I. Brett, *B. Byrne, *S. R. Campbell, F. S. Carson, D. S. Clarke, B.A., A V. Craig, *W. Dickey, W. A. Frost, P. Hayes, J. Holland, D. Horgan, *J. C. Houston, D. J. Jackson, B.A., T. Kennedy, H. H. MacWilliam, B.A., W. Magner, T. P. Magnier, T. J. S. Moffett, A. Patton, B.A., S. P. Rea, *J. Reid, D. A. Rice, A. M. Thomson.

M.D.—J. Finnegan, S. J. Killen, C. B. Pearson, S. B. Walsh, B.A. D.P.H., T. Walsh, B.A., D P.H., S. H. Whyte, J. E. Wilson.

† Upper pass. * Qualified to sit for honours in one or more subjects.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY Council was held on October 14th, Mr. H. T. Butlin, President, in the chair.

The late Sir Thomas Smith, Bart., K.C.V.O.

The Council recorded its deep regret at the death of Sir Thomas Smith, whose valuable services to the College were highly esteemed, and whose personal character made him an object of affection to all his colleagues. The Council also expressed its sincere sympathy at the loss which his family has sustained by his death.

Examinership in Midwifery.

The vacancy occasioned by the death of Dr. William Rivers Pollock will be filled up at the meeting of the Council in December.

Report to the Fellows and Members at the Annual Meeting.

A draft report, submitted by Mr. Edmund Owen on behalf of the Committee on the Annual Report of the Council, was approved and adopted. This will be presented to the Fellows and Members at the annual meeting on Thursday, November 18th.

University of Sheffield.

Mr. Clement Lucas was appointed representative of the College on the Court of Governors of the above university in place of Mr. A. W. Mayo Robson, whose period of office had expired.

Royal Commission on University Education.

The consideration of a letter from the secretaries of the above stating that the Commission will be prepared to receive information regarding the views of the college upon questions connected with medical education in London was referred to a committee.

Jubilee of the Grant of the Charter enabling the College to confer Diplomas in Dental Surgery.

It was determined to celebrate the above by a dinner given by the college to the leading members of the dental profession. The dinner will be held in the library of the college on Thursday, Deeember 2nd, 1909.

CONJOINT BOARD IN SCOTLAND.

The following candidates have been approved at the examinations indicated:

First Examination.—A. I. Clarke, J. J. Dykes, G. W. Fleming, D. B. Cama, R. B. Lilly, C. R. C. Moon, J. Warden, A. T. Kuriyan, P. E. O'Donoghue, G. B. Hanna, F. W. C. Hinings, J. J. Reynolds, O. Brunlees.

Second Examination.—G. A. Macvea, M. F. A. L'Hoste, G. I. Secluna, S. Brennan, J. N. Clark, T. Hardie, S. D. Bridge.

Third Examination.—E. Thorp, Emma C. R. Fisher, J. McManus, E. C. Hamilton, C. S. Owen, J. D. Wright, J. M. Dalzell, J. A. Hutchinson.

Final Examination.—F. B. Carvalho, R. A. Barve, R. D. Neagle, H. H. Field-Martell, M. Remers, A. F. Henriques, K. T. Nath, R. A. Hosegood, W. R. MacKenzie, S. Sharples, Beatrice Coxon, G. B. Moon, R. V. Dias, D. B. Gazdar, Maud T. Féré, H. V. A. Gatchell, F. C. Eberhardt.

CONJOINT BOARD IN IRELAND.

The following candidates have been approved at the examinations indicated:

First Professional.—J. P. Brennan, B. J. Cusack, J. J. L. Cox, H. A. S. Deane, E. G. Foley, A. B. Foott, R. F. J. Griffith, R. Green, J. F. Lyons, D. McEntire, R. J. May, C. J. O'Carroll, H. V. O'Donoghue, P. Rowan, T. F. Ryan, G. N. Smyth, R. Tivy.

Second Professional.—M. J. Ahern, A. J. Best, C. M. G. Campbell, T. J. Kelly, D. Murphy, G. Sheehan, G. A. Shiel, W. Waugh.

Medico-Legal.

WORKMEN'S COMPENSATION.

Baker's Eczema.

A. M. writes: Is there any case on record *re* compensation to a baker for eczema caused by his employment? It commenced about six months ago, and under treatment seemed to be cured, but it returned again a day or two after he had started to work. This is the third or fourth time he has returned to work after the skin seemed to have recovered its normal condition, but on each occasion the eczema has returned after a day or two at work. Is there any case bearing on his legal position for compensation?

CERTIFICATES IN LUNACY.

J. M.—(1) So far as we are aware, the only cases in which a justice specially appointed under the Lunacy Act, 1890, has to appoint two medical practitioners to certify to alleged lunacy are those which he has to consider under Section 13, Subsection 2, of that Act. (2) In the above described class of cases, even if one of the medical practitioners certifying is not the medical attendant of the patient, it is not clear that there is any legal ground for complaint. (3) We cannot say what is the usual practice for initiating legal proceedings, as it varies in different districts, but we are ready to assume that the provisions of the Lunacy Act are always strictly complied with. (4) Any patient admitted to a public asylum as a pauper, or classified as such on or after admission, can only become classified as a private patient after arrangements have been made for all expenses incurred to be repaid, either from his own resources or by some other means.

GIFTS TO LOCUMTENENTS.

A correspondent states that while acting as locumtenent he was presented with £5 by the father of a patient to whom he had given special attention. Later, when the account was sent in by his principal, the father complained of the charges, and mentioned the present to the locumtenent. The principal has since written asking for the £5. Is he legally entitled to it?

*** Although it is a well-recognized rule in the profession that an assistant or locumtenent must not receive a money present from his principal's patients, in the case of a *bona fide* present he might be legally entitled to retain it. In this instance the patient's father appears to have thought the £5 in a sense a set-off against the principal's charges. In these circumstances it would seem that the money ought to be paid to the principal.

MEDICAL WITNESSES.

Inquirer wishes to know whether, if summoned to attend as a witness the police court or assize court to give evidence as to "facts," and he is there asked for an "opinion" on the matter in question, he can claim an expert's fee before giving the said opinion.

*** A medical witness can only raise a question as to his fees before being sworn. After being sworn he must answer all questions put to him which in the opinion of the judge are relevant to the cause being tried.

THE MIDWIVES ACT.

Independent.—(1) Under Section 2 of the Midwives Act, 1902, any woman had the right on application within two years from the date of the Act coming into operation to be certified on producing evidence satisfactory to the Central Midwives Board that, at the passing of the Act, she had been for at least one year in *bona fide* practice as a midwife, and that she bore a good character. The Act came into operation on April 1st, 1903. If a midwife did not obtain certification under the provisions of Section 2, she would by Section 1, paragraph (2), be debarred from practising as a midwife. (2) With regard to our correspondent's other question, we would refer him to a reply published in the Journal of October 9th, p. 1107.

Obituary.

SIR ARTHUR MITCHELL, K.C.B., M.D.,

FORMERLY COMMISSIONER IN LUNACY FOR SCOTLAND.

In Sir Arthur Mitchell, K.C.B., M.D., who died, as announced last week, in Edinburgh on October 12th, aged 83, has passed away a public official who played a distinguished part in the development of lunacy administration. A Graduate in Medicine of Aberdeen University, he was appointed Deputy Commissioner in Lunacy on the establishment in 1857 of the General Board of Lunacy for Scotland. He was thus present at the very inception of a new order of things which followed upon the Scottish Royal Lunacy Commission's report of 1855. That remarkable document contains the germs of most, if not of all, that has since been done to ameliorate the lot of the insane in Scotland, and Sir James Coxe and the other distinguished men who drew it up found in Dr. Mitchell an enthusiastic supporter of all views tending to rescue the insane from neglect, and to free them from needless restrictions on their happiness and liberty which had grown round them during ages of ignorance and superstition, and had been followed by acquiescence in evils supposed to be irremediable.

In the great reformation of lunacy administration and the influx of new ideas which followed the passing of the Lunacy Act of 1857, the part with which Dr. Mitchell was specially identified was to ascertain the condition of the insane under private care and to guide the Board in taking measures necessary for its improvement. After an experience of six years he embodied the results of his efforts in this direction in a book entitled *The Insane in Private Dwellings* (1864), which yet remains the standard book on the subject. It disclosed a painful story of neglect and misery among the insane under private care when he entered on his duties, but it also put on record the steps taken to remedy the evils disclosed; and at the end of a few years after the passing of the Act it showed the system of caring for the insane in private dwellings established upon the satisfactory footing on which it has since rested.

In 1870 he became a Commissioner, and from that time down to his retirement in 1895 he ever showed himself anxious to support and encourage medical superintendents of asylums and others, on whom rested the burden and heat of the day, in all endeavours which held out a promise of promoting the recovery or adding to the happiness of the insane.

Sir Arthur Mitchell was in 1880 a member of the Commission on Criminal Lunacy in England, and greatly influenced the character of the report of that Commission and of the legislation which followed. In 1889 he became Chairman of a Commission to inquire into Lunacy Administration in Ireland, and in that capacity urged measures which have done much towards improving the condition of the insane in that country.

Sir Arthur Mitchell's intellectual interests extended over a wide range, and were exercised in many and varied fields, apart altogether from his life's work. To show how wide these interests were, it is enough to mention his position in some of the societies with which he was concerned; in all of them he played a distinguished part. He was Honorary Secretary to the Society of Antiquaries of Scotland, of which he became a Vice-President in 1882; Honorary Secretary and afterwards Vice-President of the Scottish Meteorological Society; President of the Early Scottish Text Society; Member of Council of the Scottish History Society, and Professor of Ancient History to the Royal Scottish Academy.

On account of the distinguished public services, already referred to, he was the recipient from Queen Victoria of the Order of Companion of the Bath in 1886, and was made a Knight Commander in 1887, while he held numerous academic and other honours; among them may be mentioned the degree of LL.D., received in 1875, from the University of Aberdeen. He was a member of the Universities (Scotland) Commission, 1890-97.

So far as his mind was free to follow its own bent, there is no doubt that his absorbing interest lay in the direction of fruitful antiquarian research, directed mainly to inquiries into the condition of prehistoric man and to the lessons which may be drawn from such studies, for he was essentially a teacher, using that word in its widest sense. These inquiries were embodied in the Rhind Lectures delivered by him in 1876, and afterwards printed as a book, entitled *The Past in the Present: What is Civilization?* This is a work of which no one who seeks to form general conclusions with regard to primitive man can afford to be ignorant. Among the many conclusions drawn from the facts set forth, supported by numerous illustrations observed by the writer, are that the individual man of the present day and his individual prehistoric ancestor stand so close together that any essential difference between them is imperceptible, that the individual man of to-day has no inborn superiority, mental or moral, over his immediate prehistoric ancestor; that the achievements of civilization are due to knowledge accumulated gradually among men in organized groups; and that the degree of civilization attained must in the long run be measured by the extent to which it succeeds in mitigating or annulling the miseries arising from the uncontrolled processes of natural selection.

Among his other works were *A List of Travels in Scotland, 1296–1900*, and *Dreaming, Laughing, and Blushing*, 1905; quite recently he undertook for the History Society, and carried to a successful issue, an edition in three volumes of *Macfarlane's Geographical Collections*.

Sir Arthur Mitchell's views on public matters were expressed and maintained with firmness, but with much tact and courtesy. He possessed a profound knowledge of men, and never failed to carry local authorities with him by reasoned appeals which could not be resisted. On his retirement in 1895 he severed himself from all interference with lunacy administration, but his wise advice and counsel were, nevertheless, sought by many throughout the United Kingdom in relation to most of the notable movements of the day likely to affect the insane. In public life he was a man of singular urbanity and charm of manner, and his learning and sound judgement were ever at the disposal of any one who sought his help. It cannot be doubted that in Sir Arthur Mitchell not only the speciality but Scottish letters and science have lost one of their brightest ornaments.

Sir Arthur Mitchell was followed to his last resting place in Rosebank Cemetery by a large and representative body of his fellow citizens, among friends who sent wreaths being the Earl of Rosebery, Mrs. Irvine, Mrs. Ramsay of Kildalton, Lady Constance Emmott, Mrs. Findlay of Aberlour, Lady Frances Balfour, Mrs. Rose-Innes of Netherdale, and the Right Hon. Sir Robert and Lady Finlay. The pall bearers were Mr. Sydney Mitchell, son; Dr. George Ogilvie, Mr. G. A. Mitchell, Mr. A. Moncrieff Mitchell, Captain A. M. Houston, Mr. Edward Hewetson, nephews; Mr. J. R. Findlay of Aberlour, Sir R. W. A. Holmes, K.C.B.; Dr. Fraser, Commissioner in Lunacy; Mr. Spence, Secretary to the Board of Lunacy; Mr. David Paulin, Manager, Scottish Life Assurance Company; and Dr. Joseph Bell.

CESARE LOMBROSO,

PROFESSOR OF PSYCHIATRY, TURIN.

We regret to announce the death of Professor Cesare Lombroso, who died suddenly at Turin on October 19th. He was born at Verona in 1835, studied medicine at Padua, and afterwards at Vienna, where he came especially under the influence of Skoda. He graduated at Padua in 1856. He served as a surgeon in the Austro-Italian war, which broke out in 1859. Some years later he was appointed Professor of Psychiatry in the University of Pavia. One of his earliest works was a volume of researches on cretinism, which was published in 1858. He made original observations on pellagra, the results of which were embodied in a monograph published in 1872. He followed this up with a memoir on the poisons of maize.

Later he was appointed to the chair of psychiatry in the University of Turin. From the beginning of his teaching career he had been interested in the relations of nervous disease and crime, and he pursued his researches and observations at Turin. These were published in his well-known work, *L' Uomo Delinquente*, which appeared in 1889. Afterwards he applied himself to the study of genius, which he held to be a form of nervous disease. He became celebrated as the founder of a school of criminal anthropology, the doctrines of which were pushed by some of his disciples to extreme consequences that brought his teaching into undeserved derision. He was a shrewd observer, and a most industrious collector of facts from all sources; but his notions of evidence were very loose, and he lacked the power of presenting his views in logical order. But to him belongs the credit of being a pioneer in a new region of scientific thought, and though much of his work was fantastic and inaccurate, he gave a stimulus to other investigators, which will probably lead to fruitful results. Of him it might, we think, be said, as it was said of the old Spanish exploder of popular superstitions—Feyjoo, that a statue should be raised to him, at the foot of which his own writings should be burnt

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We regret to have to record the death on October 13th, at Bolton Mansions, Earl's Court, of Dr. William Clibborn, formerly of Bridport, Gloucestershire. Dr. Clibborn, who was in his 55th year, retired from active practice some five years ago, finding the fatigue and exertion inseparable from a large and widely scattered country practice too great a strain. He had since travelled abroad for the good of his health, and his death, which was very sudden, was due to cardiac syncope. He was the son of Mr. John Clibborn, of Dublin, and received his early education at Stackpoole's College, Kingstown; he took the degree of B.A. at Trinity College, Dublin, and graduated M.B. in 1875 and M.D. in 1878; he also took the Licence of the Royal College of Surgeons in Ireland. After holding the appointment of Resident Surgeon to the Birmingham General Dispensary and Resident Assistant Surgeon to the Northern Dispensary, Liverpool, he settled at Bridport, where he practised for many years, and took a prominent part in local affairs. He was Medical Officer of Health for the Bridport Urban District and Medical Superintendent at the Isolation Hospital and Admiralty Surgeon. In 1883 he suggested in this Journal a scheme for a medical benefit society, and was one of the pioneers in the foundation of the Medical Sickness and Assurance Society. In Bridport he not only gained a large practice but won many friends, his genial manner, good nature, and thoughtfulness for others endearing him to all who knew him. He leaves a widow to mourn his loss, and many friends, by whom he will ever be remembered.

The many friends of Dr. Thos. Spence Meighan of Glasgow will hear with regret the news of his death, which occurred suddenly on October 17th. Dr. Meighan was Senior Surgeon to the Glasgow Eye Infirmary. He had been at the infirmary in the afternoon, and shortly after leaving the institution was found in a street near by in a semi-unconscious condition, having been suddenly overcome by illness. He was conveyed to a nursing home, where he died the same evening. Dr. Meighan was an M.D. of Glasgow University, and besides being connected with the Eye Infirmary was Lecturer on Ophthalmic Surgery at Anderson's College.

Letters, Notes, and Answers.

BRITISH MEDICAL ASSOCIATION AND BRITISH MEDICAL JOURNAL.

The offices of the British Medical Association and of the British Medical Journal are at 429, Strand, London.

Communications respecting Editorial matters should be addressed to the Editor, 429, Strand, London, W.C.; those concerning business matters, advertisements, non-delivery of the Journal, etc., should be addressed to the Office, 429, Strand, London, W.C.

Telegraphic Address.—The telegraphic address of the EDITOR of the British Medical Journal is *Aitiology, London*. The telegraphic address of the British Medical Journal is *Articulate, London*.

Telephone (National):—
2631, Gerrard, EDITOR, BRITISH MEDICAL JOURNAL.
2630, Gerrard, BRITISH MEDICAL ASSOCIATION.
2634, Gerrard, MEDICAL SECRETARY.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* British Medical Journal *alone unless the contrary be stated.*

Authors desiring reprints of their articles published in the British Medical Journal are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

Correspondents who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

Correspondents not answered are requested to look at the Notices to Correspondents of the following week.

Manuscripts forwarded to the Office of this Journal cannot under any Circumstances be Returned.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the Journal be addressed to the Editor at the Office of the Journal, and not at his private house.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* British Medical Journal *are devoted will be found under their respective headings.*

QUERIES.

EAR asks for information as to the use of peroxide of hydrogen in the treatment of discharging ears, the strength used, and the results obtained.

ELECTROLYTIC asks for advice in the treatment by radical cure, if possible, of dilated capillaries gradually forming on the nose of a man who is not intemperate; as yet there is no hypertrophy. The ordinary internal remedies, including ichthyol, and external treatment by ointments, have failed. Our correspondent asks how treatment can be carried out by multiple scarification, or by puncture with an electrolytic needle.

Adrenalin in Asthma.

PULMONA asks for information on the use of adrenalin in asthma, what dose should be given orally and hypodermically, and at what period of the attack it is most efficacious; and whether there are any untoward results to be guarded against.

ANSWERS.

A. H. C.—An authorized translation of *Klemperer's Elements of Clinical Diagnosis*, by Drs. Nathan E. Brill and Samuel M. Brickner, was published by the Macmillan Co., New York, in 1898. The German edition, issued during the course of this year and recently reviewed in the Journal, was the fifteenth.

Coley's Fluid.

IRWELL.—In an answer published in the British Medical Journal of October 16th, p. 1204, the most important reference, because the most recent, was accidentally omitted. It should have been stated that Dr. W. B. Coley read a paper on the treatment of sarcoma by bacterial toxins before the Section of Surgery of the Royal Society of Medicine on July 13th, 1909. A full abstract was published in the British Medical Journal of July 17th, p. 144.

Treatment of Sycosis.

Dr. J. McNamara (London), writes: "Sycosis" should first ascertain whether the condition is due to the ringworm fungus or to the *Staphylococcus albus* or *Staphylococcus aureus*. If due to a staphylococcus he should have a vaccine made from the patient's own cocci, and then inject about 250,000,000 of these once a week. I would add that if your correspondent would join the London Polyclinic, and would attend the afternoon consultations, he would know not only how to treat sycosis, but would learn the diagnosis and treatment of any rare or interesting disease likely to turn up in this country.

Dr. H. J. Thorp (Ipswich) writes: Remove crusts, then epilate, and finally apply oleate of mercury 1 to 2 per cent.

Ophthalmoplegia.

PARALYSIS would probably find most of what he wants in any good textbook on neurology, such as that by Sir William Gowers or that by Professor Oppenheim (translated by Mayer). Other works he might consult are those on the relation of ophthalmology to neurology, by Max Knies, and by Dr. Campbell Posey and Dr. W. G. Spiller, of Philadelphia.

Ocular Paralysis.

A. L. R.—It is extremely difficult to discuss the actions of the eye muscles and their effects upon images on the retina without actually seeing and investigating the case. As we understand the case stated, paralysis of the superior oblique would not produce a slope of the vertical part of a cross without producing a similar effect upon the horizontal part. This effect can readily be produced, however, by a rather high degree of oblique astigmatism.

Walnut Stain.

IN reply to several correspondents who have recently inquired with regard to the method of staining hair with walnut juice, we are informed that the best mode of procedure is as follows: Macerate the crushed and broken-up green skins of walnuts in alcohol (of 60°), 1 in 9, for ten days, shaking at intervals; then filter. The stain, which should be applied with a brush, does not at once produce a marked effect; it must be frequently applied. It is, however, a fairly fast stain.

LETTERS, NOTES, ETC.

A Correction.

IN the review of Dr. Dahmer's essay on diseases of the throat, nose, and ear, in relation to compensation for injuries (p. 1158) it should have been stated that the cases were drawn from 168 medical reports but did not comprise the whole of this number.

Fleas and Cancer.

Mr. F. Nolans, F.R.C.S.I. (Mayfield, Gorey, co. Wexford), writes: A few years ago I was called to see a very old woman whom I found suffering from hepatic carcinoma with considerable jaundice. On explaining her condition she remarked, "Well, whatever it is, it must be some divil of a thing for the flays (fleas) have given up biting me."

Exercise in Pulmonary Tuberculosis.

Dr. Edward E. Prest (Ayrshire Sanatorium, Glenafton, New Cumnock), writes: I notice in a paper on autoinoculation in pulmonary tuberculosis, by Dr. Paterson, published in the Journal of October 9th, that he states, "It is obviously useless to insist upon absolute rest unless the coughing can be controlled, because the patient who coughs violently and shakes the whole bed is, as regards foot-pounds of work, taking fairly vigorous exercise." In an article on graduated rest in the treatment of pulmonary tuberculosis, published in the *Lancet* for April 3rd, 1909, whilst insisting on the danger of coughing in phthisis, I endeavoured to explain the harm as being due to the actual movement of the diseased lung, and also pointed out that it was not the work which did the harm, but the movement of an organ which cannot be rested without absolute rest of the whole body, and obviously cough must be controlled. There seems good reason for supposing that exercise does good in phthisis owing to the hypertrophy of the heart which it brings about. This probably explains why most cases of initial haemoptysis bleed at all, and also why the majority of these cases do well without any very serious treatment. It is also probably the explanation of the benefit accruing from the exhibition of raw meat, and also is a reason for feeding patients with nitrogenous food and urea. The difficulty in treating consumption is largely, in my opinion, owing to the impossibility of taking any exercise when the disease is active at all. This is the great difference between treating tuberculous joints and tuberculous lungs: in the former case, owing to splints, exercise can be taken. I have found massage a useful adjunct in treating the acute cases of pulmonary tuberculosis.

The London Polyclinic.

POST-GRADUATE writes: It may prove of use to those medical men who are desirous of attaining to a greater knowledge of both the science and art of their profession to have their attention drawn to the opportunities which are offered to them by the Polyclinic. Certain of the practical classes held here are very excellent. Most of them are good. But I am sure that any one who wishes to study such subjects as diseases of the nose, throat and ear, and gynaecology, will find that the classes in these departments are of the greatest use to him. To make the best use of his time the student should so arrange that the clinical work at the hospital and the practical classes at the Polyclinic begin on or about the same date. He will find then that the work of the one supplements the other. He will be taught at the Polyclinic just the very things—namely, the methods of examination, the use of the instruments, the surgical anatomy, and such essentials—which he is left to acquire as best he may at the special hospitals, and without the knowledge of which his work is more or less a ploughing of the sands. I speak from experience. May it benefit others!

SALINE INFUSION.

DR. LENNOX WAINWRIGHT (Folkestone) writes: The administration of salines is always attended with considerable difficulty, owing to the trouble involved in keeping the fluid at an even temperature, but the following simple method has been most useful in my own practice. The saline solution is placed in a thermos bottle (carefully sterilized) at a temperature of 100° F. Into the thermos bottle is dropped a siphon of Southey tubing, and the orifice of the thermos bottle is blocked with cotton-wool. This effectually prevents heat escaping and germs from entering. An ordinary Southey's trocar is placed at the end of the tubing after siphonage has been started, and the trocar is put into the fleshy portion of the axilla or wherever a transfusion is required, and by this means the fluid can be delivered at the rate of 3 drachms a minute. If it is thought well a little ball may be interposed between two pieces of Southey tubing so as to start siphonage, but this is a mere matter of detail. The advantage of the thermos bottle is that the saline solution can be taken in the bottle to the patient's house and the siphonage through the Southey can be started at once by pumping through with a small hypodermic. No more than a foot fall is required to ensure adequate transfusion. The same method may be used for rectal or any form of irrigation where a uniform temperature is required.

SECRET REMEDIES AND PROPRIETARY PREPARATIONS.

DR. F. ZERNIK has recently published his twenty-first article on the composition of certain new preparations. According to the law in Germany, chemical combinations of antipyrin may be sold to the public, but simple mixtures of antipyrin and other known substances may not be sold, save on a medical practitioner's prescription. *Sulfopyrin* is one of these mixtures which was offered for sale as a sulphanilate of antipyrin. Another is *Meligrin*, which is described as a condensation of dimethyloxychinicin and methylacetamide. These terms are technical but rarely used names for antipyrin and exalgin. The analysis revealed that the preparation was a mixture of 86 parts of the former and 14 parts of the latter. Exalgin has been practically withdrawn from the market in favour of the more active and better acetanilide.

A chemist named Taubert produces a "pleasant tasting headache powder (ammon. spiric. puriss.)," which is supposed to act rapidly in migraine, influenza, neuralgia, rheumatism, colds, etc. It appears that ammonium salicylate has an obscure synonym, "ammonium spiricum." Since the ammonium salt is scarcely ever used in medicine, the law does not mention it as well as the sodium salt among those medicaments which may not be sold without medical prescription. The chemist therefore sells it without fear. The weight of the single powders varied between 0.39 and 0.6 gram!

In dealing with false description, Zernik mentions *Mergandol*, which is recommended by its producers as an antisyphilitic remedy for intramuscular injection and for external application. It is described as a solution of sodium mercury glycerate in glycerine; 1 c.cm. of the solution is said to contain 0.0035 gram of mercury. Sodium glycerate is recognized as an unstable compound, but neither a mercury glycerate nor a sodium mercury glycerate is known. The analysis showed that mergandol is a mixture of perchloride of mercury and sodium chloride (0.5 of the former and 0.1 of the latter) dissolved in 100 parts of diluted glycerine. Each cubic centimetre would therefore contain 0.0044 gram of Hg. The bottle, containing 50 c.cm., costs 2s. 2½d., which is at least twice as much as any chemist is allowed to charge for making up a similar prescription.

Eulatin is a white, almost odourless, mildly acid-tasting powder. It is supposed to be an amido-bromine-benzoate of dimethyl-phenyl-pyrazolon. Dr. Friedmann has described this preparation as a useful remedy for whooping-cough when given in doses of 0.1 to 0.5 gram every three or four hours. Dimethyl-phenyl-pyrazolon or antipyrin was found to be present, but the analysis failed to reveal a trace of amido-bromine benzoic acid, a compound which has definite chemical characteristics. The rest of the substance was found to consist of parabromine benzoic acid and ortho-amido-benzoic acid; two parts of the former with antipyrin in molecular proportions were present to each one part of the latter, also with antipyrin in molecular proportions. The mixture thus differs very materially from the supposititious chemical compound described by the manufacturers. Dr. Zernik considers that Dr. Friedmann should have been more careful in expressing himself with regard to the composition. The value of antipyrin in pertussis is well recognized.

Barkowski's *Irrigal* tablets are advertised as containing all the active components of wood vinegar in dry form, delicately perfumed and being easily soluble in water. One or two tablets are supposed to be dissolved in a glass or cup of hot water, and added to warm water in an irrigator. A glass containing 40 1-gram tablets costs 3s. The solid form of wood vinegar possesses an alkaline reaction! On analysis it was found to consist mainly of dehydrated sodium acetate with traces of tar and creosote. This is very different from wood vinegar, which contains tarry substances, free acetic acid, and some empyreumatic substances.

Vilja cream is now described correctly. Its constituents are diluted aqueous extracts of indifferent vegetable substances, wool fat, ceresin and vaselin, and some ethereal oils, which smell like the oil of rosemary.

SHIP SURGEONS.

AN EX-SHIP SURGEON desires to warn medical men against some shipping companies that advertise for surgeons without salary. To me (he writes) this system is radically wrong, because it lowers the surgeon to the level of the tramp or the stowaway that is working his passage. The surgeon finds himself at the end of the voyage to have lost in the bargain time, money, and very often temper. By hiring his services for nothing the surgeon gets no material, no moral advantage for himself, and keeps someone else from earning a decent and honest living. Some time ago there was a boarding-house in a northern town, nick-named the "Dogs' Home" by shipping firms, where a surgeon, and perhaps several of them, could be found any time, day or night, ready to sail for any port. The "Dogs' Home" has been pulled down, but unemployment in our profession is probably worse than ever. There is no necessity for any good shipping company to advertise for surgeons; they have on their books more than they want.

CALOMEL IN ASTHMA.

DR. A. W. GILCHRIST (Nice) writes: Dr. Tivy has been much impressed by the beneficial effects of a dose of calomel as a curative for the attacks of this distressing malady (BRITISH MEDICAL JOURNAL, September 25th, 1909, p. 882). Asthma, he had previously remarked, is rather prevalent in Brixham, the small fishing town in which he lives. Dr. Tivy does not seem to have asked himself why asthma is so prevalent in the locality he mentions nor the reason for the efficacy of his remedy. It is, perhaps, instructive to speculate on both these facts. People who live at the seaside are proverbially "bilious," and, like so many of this temperament, habitually eat too much. They have often so-called torpid livers and inadequate kidneys. They stimulate their appetites by the inordinate, and we now know injurious, use of their favourite condiment—table or common salt. These tastes, we may here say, are apparently ancestral. Who has not read the account Erasmus gave Cardinal Wolsey's physician of the manner of living in England—"I often grieve and wonder how it happens that Britain is (so) afflicted . . . and chiefly with the sweating sickness, which is a malady that seems almost peculiar to the country. . . . England is not only surrounded by the sea, but it is also, in many places, intersected by salt streams, to say nothing at present of the salt food of which the common people are amazingly fond." The passage continues: "It would contribute to this object (to render the island more healthy) if more sparing diet could be more generally recommended and a more moderate use of salt provisions." Dr. Tivy should make a rule of examining the urine (preferably by the comparative method—Gautrelet's) of his patients. He would probably find that in the cases which are benefited by a mercurial there is chloride and often nitrogenous retention (calomel is an indirect diuretic), and an excess of urobilin, pigments, and chromogens, pointing to hepatic hyperaemia and congestion. He would perceive, in fact that his interesting clients have inherited the tendency to the same category of complaints as Erasmus deplores above. Sedentary lives and gestation—both conducive to functional disturbances of the liver and kidney, with their reflex concomitants—would account for "the patients having been mostly women." A partially dechlorinated diet—less bacon, for instance—seems clearly indicated, and would presumably render the exhibition of calomel of less frequent necessity.

COLOUR-BLIND ENGINE DRIVERS IN FRANCE.

FLEET SURGEON W. E. HOME, R.N., writes: With reference to the shortsightedness in colour vision which has recently been discussed, I beg to mention that when taking passage in H.M.S. *Tamar*, in February, 1886, I was told by Surgeon Gordon of that ship, an old fellow student of mine in Edinburgh, that he had noted this condition. He had observed that some men on look-out could recognize more quickly than others the colour of a light they had seen ahead; the others could not appreciate the colour of the light till it came closer; they had a lesser sensibility for colour. This condition had also been noticed by officers of watches. Dr. Gordon had reported this observation in his official journal, and had had from the Medical Director-General a request for further investigation and report. Unluckily Dr. Gordon died not long afterwards, and I cannot say that he had made further inquiry later.

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